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Original Articles.

CONSERVATIVE PERINEAL PROSTATECTOMY.

A REPORT OF FIFTY CASES.*

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BALTIMORE.

One year ago I presented to the American Association of Genitourinary Surgeons a paper entitled "Conservative Perineal Prostatectomy—A Presentation of New Instruments and Technic."[1] Since then I have further elaborated the technic, and it is my purpose to-day to outline the results obtained in 50 cases in which I have employed this method.

In using the word conservative, I do not wish it to be understood as opposing radical surgery for the prostate, but simply as an advocate of the conservation of those structures which are in no way concerned in the obstruction to free micturition, and are of themselves of independent importance, viz., the preservation of the urethra and of the ejaculatory ducts. By means of the 50 cases which I report I hope to make it clear that both of these structures need not be uselessly sacrificed or injured and that their preservation in no way detracts from a perfect functional result, so far as the restoration of normal urination is concerned, but also that the virility of the sexual powers will be generally left unimpaired.

I hope I will be pardoned for outlining here briefly the principal features of the technic already described. The form of perineal incision is of no particular consequence but, as the operation which I employ is carried out between the bulb of the urethra and the anterior surface of the rectum, I have usually made my cutaneous incision so as to give the best exposure to this region—an inverted V, with the apex over the posterior part of the bulb and the branches extending to a point between the anus and the ischial spine on each side (Fig. 1). This incision, although only carried through the skin and superficial fascia, allows the rectum to be retracted backward with ease, giving a splendid exposure. The only muscular structures divided are the central tendon of the perineum (Fig. 2) and the rectourethralis muscle which lies immediately beneath it (Fig. 3) and covers the membranous urethra and apex of the prostate. This small muscle, as Proust has shown, is the key to the situation, because it draws the rectum forward nearly up to the triangular ligament, where it is in great danger of being injured, if the rectourethralis is not carefully divided before going deeper, and because it also covers the entrance to the retroprostatic space which forms the field of work. The membranous urethra having been exposed, a small longitudinal incision is made on the grooved staff in the urethra (Fig. 4), the edges are carefully caught with forceps, an ordinary sound is passed through into the bladder to enlarge the canal, after which the prostatic tractor (Fig. 5) is inserted and opened out (Fig. 6).

When traction is made, the posterior surface of the prostate emerges at once from its hidden site in the depths of the wound, and the operator is free to carry out any maneuvers which he may desire (Fig. 7).

After having previously performed many suprapubic and perineal operations in the dark, depending entirely on the sense of touch, and glad enough to remove almost any portion of the prostate that I could get hold of, regardless of the urethra, etc., it occurred to me in the third perineal case with this tractor that it was a pity to sacrifice undoubtedly valuable structures, portions of the urethra and ejaculatory ducts, when the prostate could be so drawn down that it lay almost in the surface of the wound ripe for any nicer procedure which one might wish to execute.

I determined, by study of anatomic and pathologic specimens of the prostate, that two divergent incisions (Fig. 7) could be so made through the posterior surface of the prostate as to preserve between them the ejaculatory ducts and the floor of the urethra, without retaining any obstructive tissue (Figs. 8 and 9), and that if a median bar or lobe were present, it could be easily drawn by the tractor so as to project into one of the lateral cavities, and there be enucleated from its side, without disturbing the ejaculatory ducts, or even the urethra (Fig. 10).

That this assertion, which I offered at first with considerable hesitation, is undoubtedly true, I can now, on an experience of many middle lobe cases, affirm with great positiveness—and this without leaving behind any portion of hypertrophied tissue sufficient to produce obstruction of free urination. It has also, contrary to my expectation, proved applicable to all forms of median lobe enlargement, including even enormous intravesical outgrowths (one of which was as large as an orange and weighed 240 grams.) I am free to admit that in some of these cases the median enucleation might have been done more quickly from a suprapubic wound, but the middle lobe was always often associated with lateral enlargements which would have been more difficult to remove by that route, and the prospect of a much shorter convalescence and less operative risk, put me on my mettle to accomplish the more ideal, though more difficult, feat. Another reason has been that I have always been able by spinal cocainization to get excellent anesthesia of the perineum and prostate, whereas I have failed to get like good results for the suprapubic route.

* Read in the Section on Surgery of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904. The discussion on the symposium on prostatectomy, of which this article was a part, appeared in THE JOURNAL, Nov. 12, 1904, page 1452.

1. Published in THE JOURNAL A. M. A., Oct. 26, 1903.

THE USE OF THE INDEX FINGER AS A TRACTOR.

There are some cases, however, in which the median enlargement is in the shape of a small bar or lobe, so adherent that it is difficult to engage it with the blade of the tractor, as described in my first paper, and for these I have of late employed the index finger of the left hand in place of the tractor in the urethra, to push the lobe into the lateral cavity. After the tractor has been withdrawn the finger is inserted gently through the opening, down the prostatic urethra, until the end is free in the bladder. Examination will then reveal the median bar or lobe which remains, and it is an easy matter, by crooking the finger over it, to carry it into the left lateral cavity where it can be enucleated (Fig. 11). If an adherent bar is encountered a fairly sharp periosteal elevator is a good instrument with which to peel

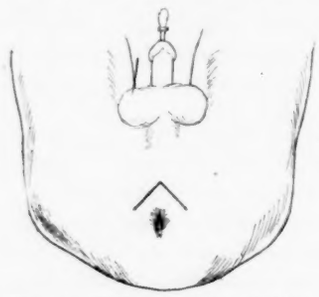

Fig. 1.—The inverted V incision.

it out. Occasionally it may be necessary to use scissors for this purpose, and to get hold of the mass to be removed as it begins to be separated, some long forceps may be required.

A very small rounded or pedunculated median lobe has been, in several of my cases, impossible to engage with the blade of the tractor, but I have been able, by using the finger instead of the tractor, to successfully remove it without injuring the urethra or the ejaculatory ducts. The technic described above is entirely different from that of Albarran, who draws the median lobe into the widely opened urethra with the finger, the portion of the

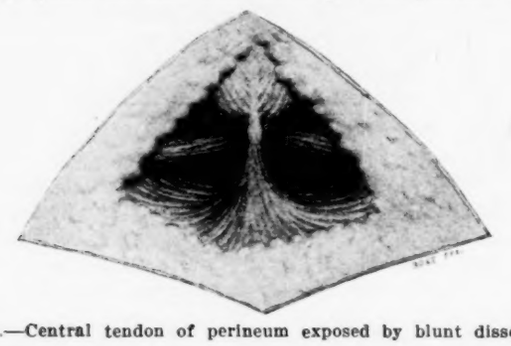

Fig. 2.—Central tendon of perineum exposed by blunt dissection.

prostate containing the ejaculatory ducts being destroyed, as he admits. He even goes so far as to ligate the vasa-deferentia in the groin after perineal prostatectomy has been completed, on the ground that the ejaculatory ducts have already been destroyed, and vasectomy will prevent epididymitis, which occurred in a large percentage of his cases.

The following case illustrates the value of the modification of technic described above:

No. 493.—J. T. M., 54 years. Admitted Oct. 23, 1903.

History.—Frequency of urination beginning 15 years ago; considerable difficulty in voiding urine for past 10 years. One year ago he urinated every hour night and day—after that incontinence. He has been using a catheter for a short time.

Examination.—Prostate small and hard. Cystoscope showed small median lobe and slight lateral enlargements. The urine was acid and purulent. Residual urine, 500 c.c.

Operation.—Ether anesthesia. Enucleation of lateral lobes, which proved very small, a median bar and a pedunculated middle lobe the size of a pea. Urethra, bladder and ducts were left intact. Lateral lobes and median bar were easily removed with the assistance of the tractor in the bladder. The pedunculated median lobe was so small that it could not be engaged with the blade of the tractor, but after this instrument had been removed the index finger was introduced, as shown in

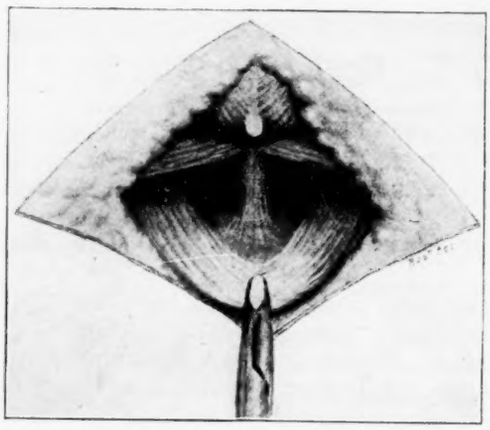

Fig. 3.—Central tendon divided, exposing rectourethralis muscle.

Figure 11, when it was easily shelled out, although only about 8 mm. in diameter (Fig. 12). Total weight of prostate was less than 15 gm. Median lobe, about 2 gm. Double drainage. No shock.

Result.—Convalescence was rapid. The patient left for home in third week. Interval between urinations was then 4 hours; residual urine 40 c.c., erections had returned. Perineal wound closed in the fourth week.

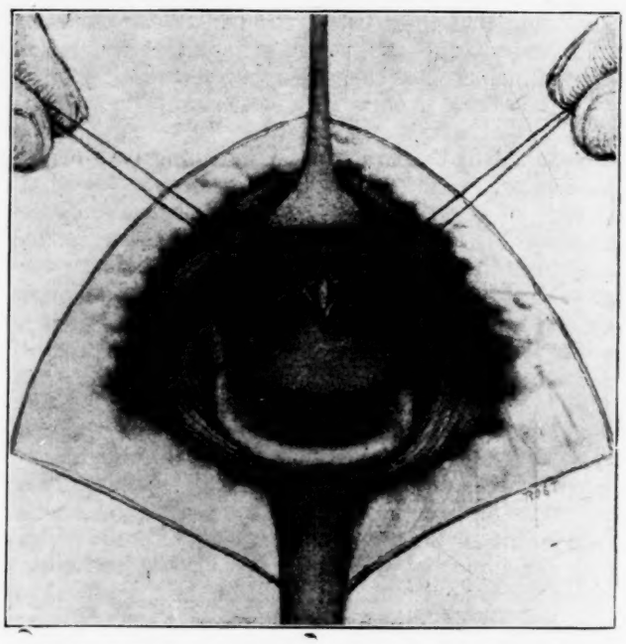

Fig. 4.—Incision of membranous urethra for introduction of tractor.

Report several months later: Urination free, about 500 c.c. at a time, at intervals of three hours. No residual urine, no incontinence. Erections, coitus and ejaculations normal.

A very pedunculated middle lobe may evade both the finger and the tractor, and in such instances it may be

best to insert a curved clamp and draw the middle lobe down the dilated urethra where it may be enucleated or divided with scissors. This is the technic employed by Albarran.

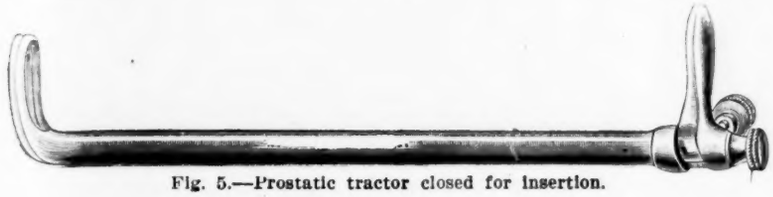

Fig. 5.—Prostatic tractor closed for insertion.

A SUBURETHRAL METHOD OF REMOVING A MEDIAN BAR OR LOBE.

In case the patient has already lost his sexual powers the reason for preserving the ejaculatory ducts does not hold, and in such cases, when the median bar or lobe is too small or too adherent to be delivered into a lateral cavity with the tractor, I have removed the mass suburethrally, after transverse division of the ejaculatory bridge as shown in Figure 13.

After stripping back the capsule (Fig. 14), it is an easy matter to shell out or to excise the median bar or lobe without opening the urethral or vesical mucous membrane covering it, as shown by the following case:

No. 528.—R. M. W., 78 years of age. Admitted Jan. 9, 1904.

History.—Onset occurred 18 years ago, with gradual increase in difficulty of urination. In 1901, he often voided urine 30 times during a night; he used a catheter only occasionally. In April, 1901, double castration was performed by another surgeon with only slight benefit. He now voids urine very frequently, at times, every hour.

Examination.—Condition was good for his age. Arteriosclerosis slight. Urine was acid and moderately purulent. Prostate was considerably enlarged. Catheter was difficult to pass—urethral distance eleven inches. The cystoscope showed a median bar, a fairly large left, and a similar right lobe.

Operation.—Spinal anesthesia by cocain, gr. 1/3. Enucleation of large lateral lobes and small median bar, as shown in photograph (Fig. 15). The "ejaculatory bridge" was purposely cut to remove the bar, which was enucleated as described above. Urethral and vesical mucosa covering the bar was not torn. The lobes weighed 74 gm.; the median, 7 gm. The patient was up in a wheel-chair on the third day, tubes out on the fourth day.

Report: Five months later, he does not have to use a catheter—can empty bladder. Fistula closed. No incontinence. No residual urine, but cystitis and some vesical contracture are present. Micturition about every two hours. The patient had no after-treatment, and the frequency of urination could be relieved by dilatation of the bladder by hydraulic pressure.

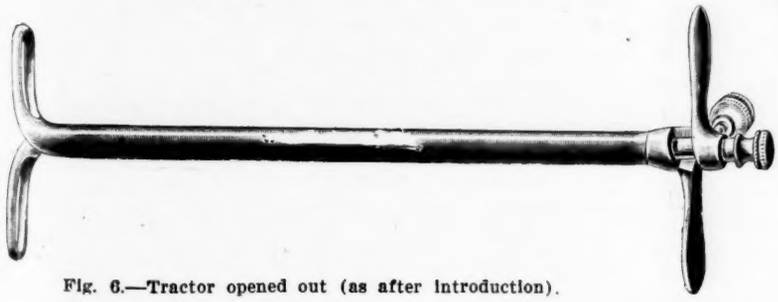

Fig. 6.—Tractor opened out (as after introduction).

TREATMENT OF VESICAL CALCULUS AS A COMPLICATION OF ENLARGED PROSTATE.

In the great majority of cases the median mass can be enucleated through the lateral cavity—the larger the lobe, the easier it is.

In my first 100 cases of prostatic hypertrophy, calculus was present in about 30 per cent., and, although the proportion has not been so great in these 50 cases of perineal prostatectomy it has occurred frequently enough to be an important factor in the operation. Either litholapaxy, before or during the prostatectomy operation, or suprapubic or perineal lithotomy may be performed. Without going into the arguments for or against either of these procedures, it is evident that if a perineal prostatectomy is to be performed the ideal

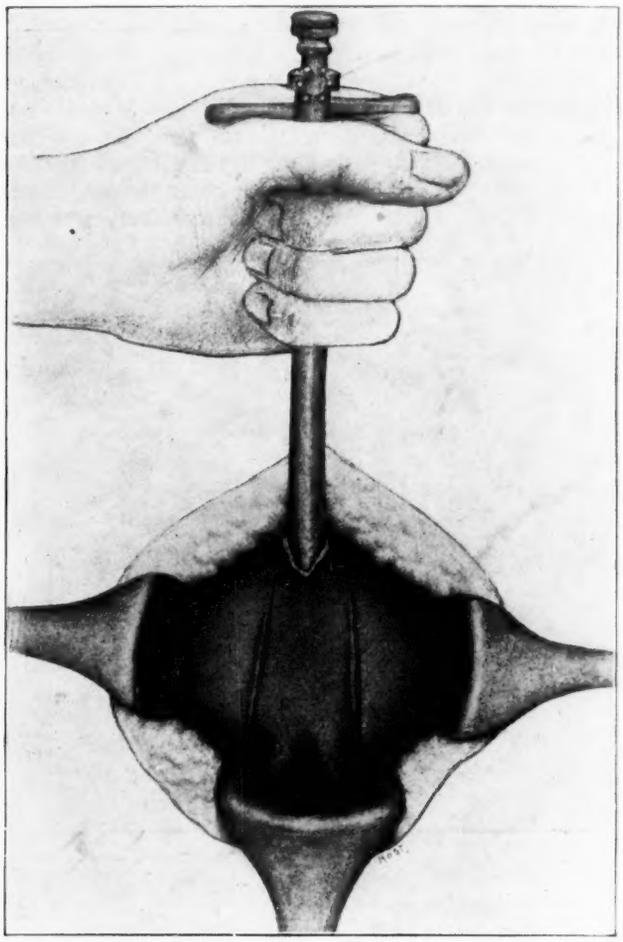

Fig. 7.—The prostate drawn down by tractor.

procedure is to remove the calculus at the same sitting, without crushing it, for litholapaxy is in these cases a tedious procedure. If, however, the removal of the calculus intact will seriously injure the urethra, the ejaculatory ducts or the neck of the bladder, such a method is contraindicated. To drag a calculus by main force out through the urethra, as it is left by the technic which I follow, would be at once dangerous and destructive, except when it is small.

I have therefore endeavored to devise a method which would be free from the dangers mentioned above, and which would also provide for the removal of moderately large stones. The technic which I have found most satisfactory is graphically shown in the accompanying drawing (Fig. 16).

As seen here, the urethra is split with scissors along

its left lateral wall, from the urethrotomy wound in the membranous urethra up to its vesical orifice. By this procedure, the urethra becomes a common cavity with that left by the enucleation of the left lateral lobe, and abundant room is furnished for the extraction of calculi. If the cystoscope has shown the calculus to be only a moderately large one, it is usually only necessary to dilate the vesical orifice with a uterine dilator in order to extract it with the forceps. If the calculus is too large to be thus withdrawn, a probe-pointed bistoury may be inserted, and the orifice enlarged by a cut through the vesical mucous membrane covering the left lateral cavity of the prostate.

I have followed the technic described above in five cases; in three cases removing one calculus, in one, two, and in another seven, with success in all. The ejaculatory bridge containing the ducts was not injured, no urethral nor vesical mucous membrane removed, and the perineal wound healed just as rapidly as after the simple prostatectomy; in one case, perineal leakage ceased after the ninth day. I have not found it necessary to close

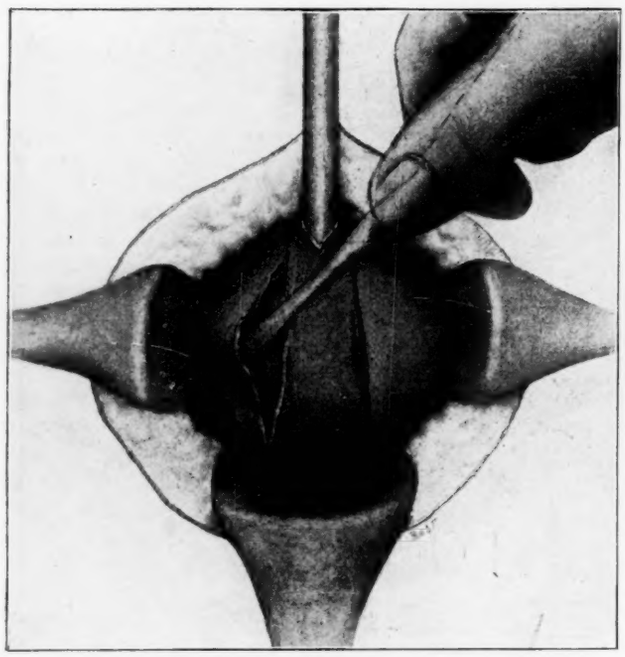

Fig. 8.—Stripping back the capsule with blunt dissector.

the divided urethra with sutures, but have simply provided the double urethral catheter drainage through the urethrotomy wound and the gauze packing for the lateral cavities as usual. The great advantage of perineal over suprapubic lithotomy is that the patient can be propped up in bed at once, and moved into a wheeled chair on the third or fourth day. The secret of success in these cases, is to flush the kidneys and to get the patients out of bed quickly, and this can not be done after the suprapubic operation with the same impunity and rapidity as in the perineal cases. In some cases *sectio alta* may be necessary, though an attempt to crush the stone through the perineal wound may be a decided one.

The following case shows that a very large calculus may be removed through a lateral cavity by the technic described above:

Patient.—S., male, aged 65.

Examination.—On cystoscopic examination a moderately enlarged prostate was found, complicated by a very large, rough vesical calculus.

Operation.—Perineal prostatectomy was performed by the usual technic, the urethra and "ejaculatory bridge" preserved, and the moderately hypertrophied right, left and median lobes enucleated. The left lateral wall of the urethra was then divided longitudinally up to the vesical orifice, with scissors. (Fig. 16). Large stone forceps were inserted into the bladder, and a calculus of great size caught. On withdrawing the forceps the calculus was found to be too large to pass through the dilated vesical orifice, but by making traction the vesical mucosa in front of the stone was drawn into the left lateral cavity, where it was divided with a scalpel, on the stone as a bobbin. After this, the calculus (Fig. 17) was easily extracted. The divided vesical neck was then approximated with two catgut sutures, and the lateral wall of the urethra easily closed.

Result.—The patient made an excellent recovery. The urine ceased coming through the perineum on the sixteenth day; no incontinence of urine followed; and normal micturition was established.

The stone, which is apparently oxalate of lime, has a very rough surface, and measures 4.5x3.5x3.5 cm.

PRELIMINARY TREATMENT.

This is of very great importance for successful results in these very delicate patients, and it is often wonderful how careful nursing will carry one over a crisis and get him finally into condition for operation, as shown by the following case:

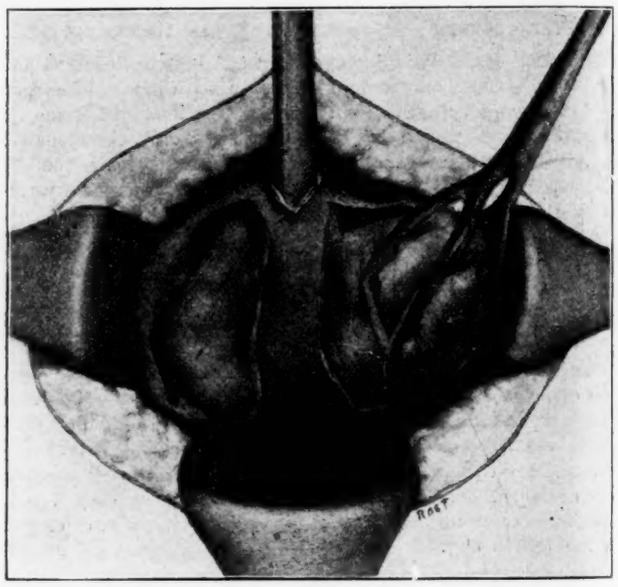

Fig. 9.—The enucleation of lateral lobes.

No. 576—D. C., aged 72, was admitted April 22, 1904, in a desperate condition.

History.—For five months he had been compelled to urinate every half hour, and ten days previously complete retention developed, but his physician was unable to catheterize him for 24 hours, when he found 1,500 c.c. of urine present. In a few days he had fever, nausea and a severe pain in left kidney. On entrance to the hospital he was emaciated, had fever, and showed evidences of uremia. His bladder was greatly distended and the left kidney was enlarged and tender. After two or three days be became desperately uremic.

Preliminary Treatment.—A rubber catheter was fastened in the urethra, and he was given submammary infusions and salt solution by rectum. Forced liquid diet was given for several days.

Result.—Under this treatment he gradually became rational, uremia disappeared, and finally, after six weeks of "internal hydrotherapy," perineal prostatectomy was performed under spinal anesthesia, cocain, gr. 1/3, being used. He was very little shocked by the operation, and made a satisfactory recovery. The fistula closed in 5 weeks, and examination six weeks after operation showed 20 c.c. residual urine, urination free, bladder contracted by long drainage, and holding only 150 c.c.

for which he will be treated by hydraulic dilatation. His general condition is excellent, and one would not think that only a few weeks previously he had been so desperately ill.

CYSTOSCOPY.

Cystoscopy is, I think, of very great importance, for it tells us the size, character and disposition of the prostatic enlargements in the bladder and thus indicates what we must look for at operation and the best means of attack. If the cystoscopy shows that the lateral portions are alone enlarged, there being no median lobe nor even bar present, we know at once that after the lateral lobes have been enucleated, nothing further is necessary. When on the other hand a definite median lobe is shown by the cystoscope, we should not rest content until it has been removed by the usual technic or by the modifications described above. The cystoscope has also shown other conditions, such as calculi, and vesical tumors, when such were little to be expected from the symptoms. The important rôle played by diverticula of the bladder, and demonstrated by the cystoscope is shown by the following case:

Patient.—E. J. I., aged 60, had had complete retention of urine and used a catheter for several years. He saw a surgeon in another city, who passed a catheter, and told him that he was suffering from prostatic hypertrophy, for which vasectomy would be the appropriate treatment.

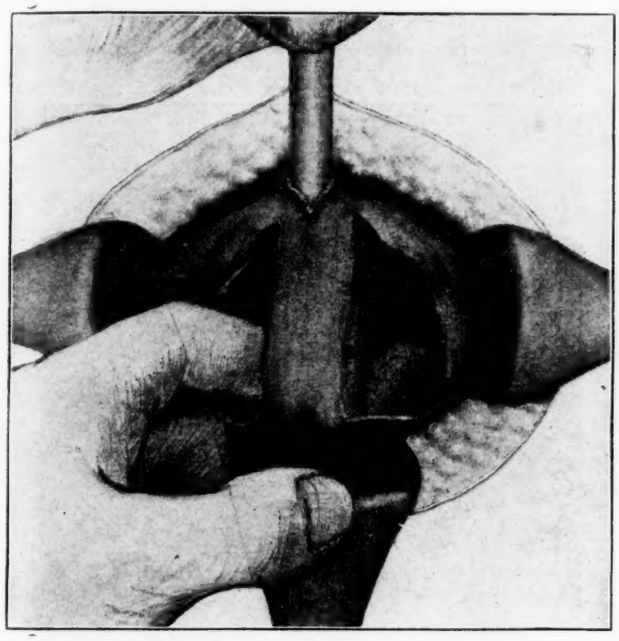

Fig. 10.—Delivery of the middle lobe into left lateral cavity.

Examination.—On examination I found no prostatic enlargement, but the cystoscope showed that the obstruction to urination was due to two diverticula beneath the trigone, which was so elevated by them that it acted as an obstruction to the egress of urine through the prostatic orifice.

Treatment.—He was restored to voluntary urination by a suprapubic operation, in which the septa between the diverticula and bladder were divided and the cut edges sutured.

In another case, the cystoscope showed a small opening in the anterior wall of the bladder, which communicated with a very large diverticulum. The prostate was bilaterally enlarged, and 1,200 c.c. residual urine was present. Prostatectomy was performed, but as it seemed dangerous to leave the diverticulum I made a suprapubic incision, exposed the anterior wall of the bladder, found that the diverticulum had a neck like a gourd and extended backward beneath the peritoneum, and along the rectum, and contained about 500 c.c. of fluid. After division of its neck at the bladder wall the diverticular sac was easily extirpated, and the vesical opening closed like the stump of an appendix. The bladder was not opened in either procedure. There was no subsequent leakage and the patient is perfectly cured. Without the cystoscope, the diverticulum would not have been discovered, until at some late date when possibly occlusion of its orifice and perivesical abscess would have furnished an interesting autopsy. I might cite numerous instances showing the great importance of cystoscopy in every case before operation, where the condition permits. The cystoscopic views obtained of the different segments of the prostatic urethral margin I record in diagrams devised especially for this purpose as shown in Figure 18.[2]

SPINAL ANESTHESIA.

The use of spinal cocainization has proved of very great value in those cases in which, on account of old age or renal disease, ether or chloroform would be dangerous. I now use one-third of a grain of dry sterile cocain, and allow it to dissolve in the spinal fluid which has been drawn into the barrel of a Luer all-glass syringe, which has been so successful in the hands of Goodfellow. In my cases, now numbering ten, there have been none of the unpleasant sequelæ which we used to have when an aqueous cocain solution was injected into the canal. In several instances there has been a very slight nausea and vomiting on the table, but this is all, and the anesthesia has been perfect. Two of my patients were over 80 years of age, and others were either very old or very weak. In one case, already mentioned when speaking of preliminary treatment, one kidney and possibly both were diseased, and the patient was very uremic. In several of these cases I would not have dared to give a general anesthetic, and I firmly believe that through the use of spinal anesthesia the radical removal of the prostate through the perineum has been made a very much safer procedure than it was when ether or chloroform was necessary, and that the Bottini operation has been robbed of the strongest argument in its favor, viz.: that it could be done under local cocain an-

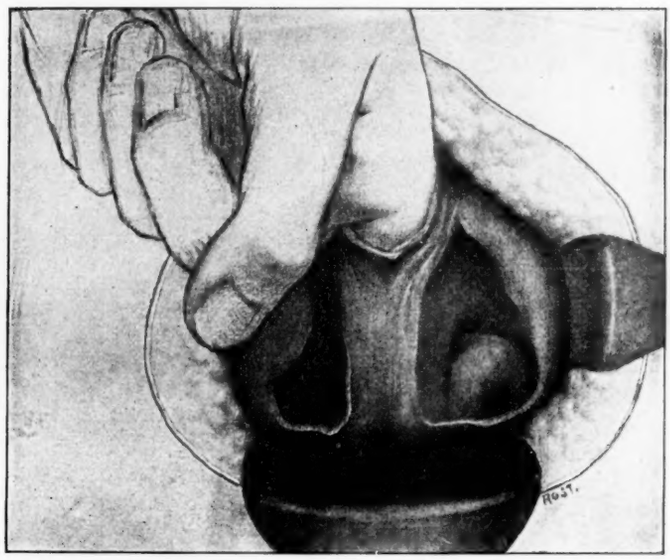

Fig. 11.—The use of index finger to deliver a small median lobe into lateral cavity.

2. The Use of the Cystoscope in Prostatic Hypertrophy, Bulletin of the Johns Hopkins Hospital, November, 1904.

esthesia. One-fourth of a grain, I believe, is sufficient to insure excellent results.

AFTER-TREATMENT.

This has been so fully described in my previous article that I have little to add. As stated above, my guiding rules are:

1. To keep the kidneys very active, by means of water by mouth (from two to four quarts a day), and, if necessary, by subcutaneous infusions, or rectal injections of normal salt solution.

2. To get the patient up as soon as possible (propped up the second day, out of bed the fourth day, and walking as soon as possible).

3. Early removal of the gauze and tube drains. The former had best be removed on the second day and the tubes on the third or fourth day. The earlier the tubes are removed, the earlier the perineal fistula will close. Continuous irrigation of the bladder is now rarely continued longer than two or three days, sometimes only one. Since using it, however, I have not been troubled by the tubes becoming blocked by blood clots, as often happened before.

4. Avoidance of instrumentation: The cases in which I used a retained urethral catheter, in the hope of facilitating the closure of the perineal fistula, have not proved the value of this procedure. In fact, in those cases in which the fistula closed in from 6 to 10 days, no catheter was inserted after the withdrawal of the perineal tubes. The wound is now allowed to close without additional packing after removal of the original gauze packs on the second or third day. I practically never pass sounds after operation. None of my 50 cases have shown any tendency to stricture formation, and a silver catheter will nearly always pass in without even detecting any roughness along the membranous urethra at the site of the urethrotomy. The use of the retained catheter, and dilatation by sounds are, I believe, the inciting causes of epididymitis. Cystitis and contracture of the bladder are the most important and common complaints with which we have to deal after the patient has been relieved of his prostatic obstruction. This is particularly true of patients who have suffered from severe interstitial cystitis or vesical calculus, or where the bladder has become contracted by a prolonged use of the retained catheter. In many of these cases the bladder may be distinctly enlarged by the patient voluntarily holding his urine as long as possible, and imbibing freely in water. It is often necessary to spend several weeks in forcibly distending the bladder by hydraulic pressure in order to restore that viscus to its normal size. In a paper on the subject[3] in 1898, I showed the simplicity and efficacy of this method, and in numerous cases recently I have demonstrated its necessity to obtain a functional cure; restoration to urination at normal intervals, after prostatectomy. The accompanying chart (Fig. 19), is the record of a case in which the largest amount of urine voided at a time was 60 c.c., the bladder on forced distention held only 80 c.c., and the interval between urination was one hour and ten minutes. The rapid improvement in vesical capacity, amount voided and the interval under "the hydraulic pressure treatment" is graphically shown in the chart.

Fig. 12.—Photograph, actual size. Small pedunculated median lobe, small median bar. Two lateral lobes. Weight 15 gm.

RESULTS.

I have thus far (May, 1904) operated on 50 cases by this method. The ages of these patients were as follows:

Over 80 years	2	Between 60 and 65	13
Between 75 and 80	7	Between 55 and 60	6
Between 70 and 75	8	Between 50 and 55	2
Between 65 and 70	7	Under 50 years	5

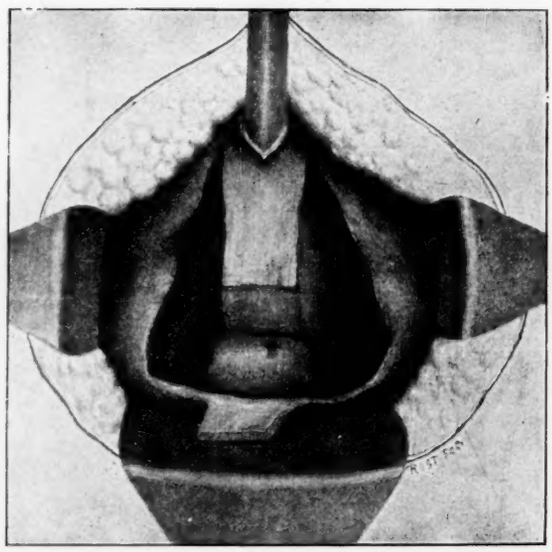

Fig. 13.—Division "ejaculatory bridge" suburethral enucleation of median bar.

MORTALITY.

There have been no deaths which, in my judgment, can be justly charged against the operation.

One man, aged 72, was in excellent condition two weeks after the operation, when, after an enema he died very suddenly and autopsy showed pulmonary embolism. The second death occurred one month after the operation, in a patient aged 82 years, who did well for two weeks, but after that grew gradually weaker and died, apparently, as much from old age as from anything else. The list of ages as given in the table shows at a glance the benignity of the operation, and the absence of operative deaths speak for its wider employment in severe cases.

In five cases a Bottini operation had been previously done (by me in three). One of these required prostatectomy on account of alarming hemorrhages from the intravesical prostatic enlargements, the other two, on ac-

3. Bulletin of the Johns Hopkins Hospital, May, 1898.

count of difficulty of urination, due to persistence of prostatic obstruction. One case had incontinence of urine, which was not relieved by prostatectomy. The fifth case had been operated on by another surgeon without result, and was cured by prostatectomy.

RELIEF OF OBSTRUCTION.

Eighteen cases had complete retention of urine and led catheter lives. Thirteen used the catheter, but were able to void some urine naturally; the frequency of using the catheter varied greatly. In 14 cases the patient did not use a catheter, although, in one case, the residual urine

Fig. 14.—Schematic longitudinal section of the urethra, showing the median enlargement enucleated beneath the urethra.

was 1,200 c.c. In 5 cases the urine escaped through suprapubic fistulæ. I have heard from all of these cases. None of them is using a catheter. The suprapubic fistulæ are all healed, and voluntary urination is present in all cases and but two or three complain that the stream is smaller than normal.

Fig. 15.—Photograph of large lateral lobes and median bar removed by suburethral method.

RESIDUAL URINE.

I know of no case that has more than 35 c.c. of residual urine. I have been able to examine about one-half of the cases and have found only once as much as that present, and in the majority there is no residuum. Those whom I have not seen have written me that they have every reason to believe that they can empty the bladder.

CAPACITY OF THE BLADDER.

The capacity of the bladder has much to do with the functional result.

In 10 of my cases the bladder was more or less markedly contracted before operation. In 3 cases calculi were present; the bladder held 50, 65 and 100 c.c., respectively; the first two were voiding urine very frequently and the third used the catheter every hour. After operation, all suffered from frequent urination. One remained for treatment and in one month his bladder capacity had been increased from 160 to 310 c.c., and the interval from one hour to three hours; residual urine, 8 c.c. One of the other cases, not treated, is able to void urine well and to empty his bladder, but the capacity is so small that he is compelled to urinate every half hour.

A very instructive case was that of a patient who came to the hospital very uremic, with a greatly distended bladder and pyonephrosis. Under continual catheterization, infusions and liquids he finally became strong enough for operation, but his bladder had contracted until it held only 30 c.c. Five weeks after operation he voided urine in a large stream, and there was only 20 c.c. of residual urine present. The bladder, however, will not hold over 150 c.c. on forced distension, and the patient has to void urine every hour and a half.

Another case had a vesical capacity of only 210 c.c. after operation but in four weeks the bladder was enlarged by twice daily forcible hydraulic dilatations up

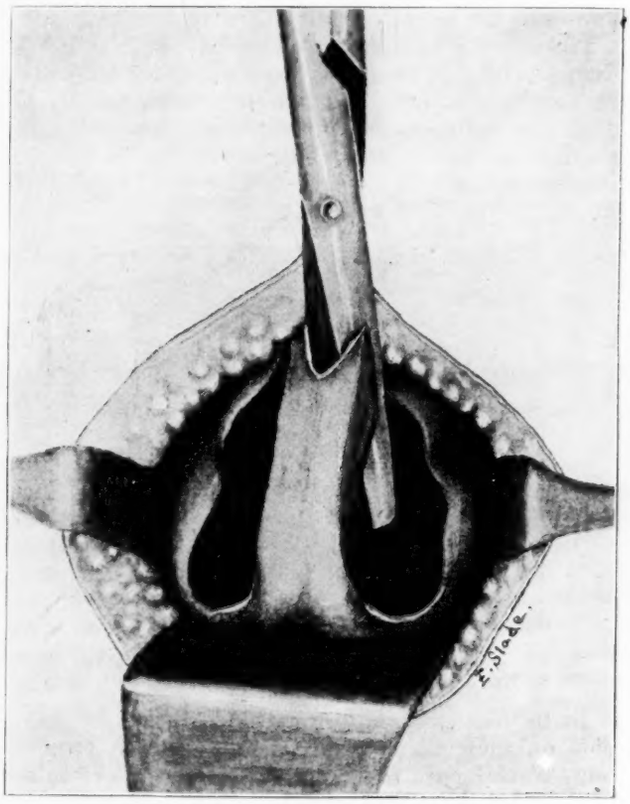

Fig. 16.—Division of lateral wall of urethra to allow extraction of large calculus through left lateral cavity.

to 460 c.c., and 19 months after operation he voided urine every six to eight hours.

I am convinced that several of my patients who now report frequency of urination could be restored to a normal interval by the dilatation treatment. This generally should not be begun until 5 or 6 weeks after the operation, when the fistula is firmly closed. Considerable pressure must be used, and it is necessary for the patient to endure a good deal of pain in order to accomplish results.

PRESERVATION OF SEXUAL POWERS.

I have tried hard to find out the exact status of the patients' *puissance* before and since the operation. This is a delicate question always, and one about which personal testimony is very likely to be slightly untrust-

worthy, perhaps unduly boastful on the one hand, or too melancholic on the other.

Of the 50 patients 22 claimed to have normal sexual powers. I have tabulated the answers received from these as follows:

Under 50 years of age, 4: Erections present in 3, two of whom reported coitus normal. The third has not yet attempted intercourse. The fourth, who has had no erections, suffered severely from sexual neurasthenia which was aggravated by the operation, and he now claims to be unable to ride in a buggy on account of the pain produced, although he is apparently well.

Between 50 and 59 years of age, 6: Erections present in all. Coitus normal in 5, not attempted in the sixth.

Between 60 and 70 years of age, 7: No answer from two. Erections present in 3, of whom 2 have not attempted coitus, and the third reports intercourse and ejaculations normal, although he is 67 years of age.

Between 70 and 79 years of age, 5: Erections present in 2, one of whom, although 78 years of age, still indulges in intercourse. Erections not present in one. Two cases too recent to be included.

Ten patients reported the sexual powers impaired before operation; of these four are too recent to be counted (under three months). Three have had erections, one nocturnal pollutions, but none have attempted sexual intercourse. Seven cases who acknowledged to have lost their *puissance* before operation were aged, respectively, 60, 63, 70, 72, 77, 78 and 82.

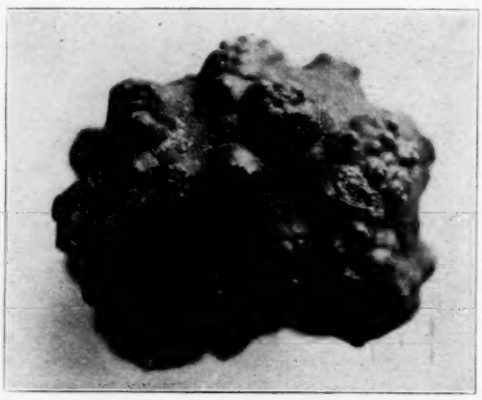

Fig. 17.—Photograph of stone (natural size) removed through lateral cavity.

In thirteen cases, unfortunately, no notes are obtainable on these points. In several of these prostatectomy cases I have found spermatozoa in the ejaculated fluid, in two cases the spermatozoa being actively motile. These results are certainly in marked contradiction to the experience of Proust, who says: "It (prostatectomy) suppresses totally, not only the ejaculations, but also the erection. Certain exceptions have beeen cited, but they have treated probably of incomplete operations. The erections which these patients have before operation are generally congestive. The *impuissance* of prostatics not only is probable before operation, but it is certain after. When the disease is in its incipiency and the patient is relatively young, this operative consequence should dictate abstention (from operation)."

When one considers the fact that most of my cases have been operated on in the past year and that in several of the early cases erections were absent for more than six months before they returned after operation, I think the prospect is very good for obtaining a high percentage in the preservation of the sexual *puissance* by the technic which I have here presented.

CLOSURE OF FISTULA.

Complete and final closure of the perineal urinary fistula occurred:

Within 2 weeks in 6 cases.	Closed but no note as to time .....7 cases.
Within 3 weeks in 6 cases.	Fistula still open.....3 cases.
Within 4 weeks in 5 cases.	Recently operated on....4 cases.
Within 5 weeks in 3 cases.	Rectal fistula present...4 cases.
Within 6 weeks in 3 cases.	
Within 8 weeks in 6 cases.	
Within 12 weeks in 2 cases.	
Within 17 weeks in 1 case.	
Within 20 weeks in 1 case.	

In most of the cases the urine began to come through the penile urethra in a few days after removal of the perineal catheters, and in two cases, none escaped through the perineal wound after the eighth day. When the fistula persisted after three weeks, it was in nearly all cases a pin-point affair, through which very little urine escaped. In two of the three cases in which a fistula is still present only two or three drops of urine escape through it, but in the third about 15 c.c., came through. In one of these three cases a piece of gauze was unfortunately left in the wound for two months; none of them has been treated by me since the operation and I believe all would close promptly with appropriate treatment. In the third case it has been shown microscopically that the prostatic enlargement was carcinomatous.

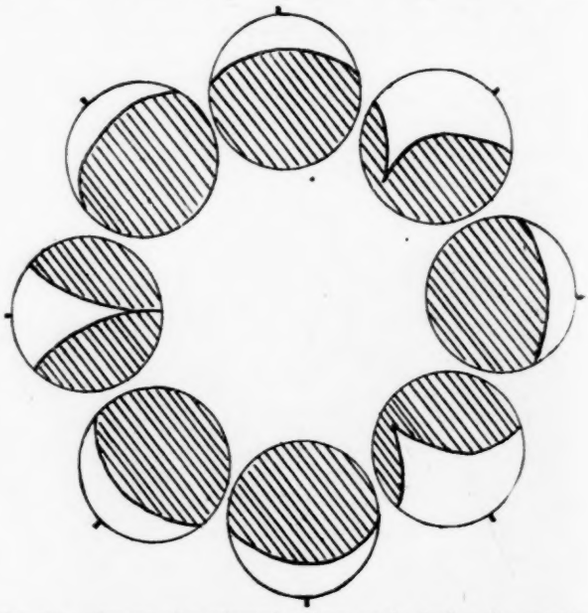

Fig. 18.—Record of cystoscopic views made during the examination of a case of median and bilateral hypertrophy.

In a recent case in which a fistula persisted for 5 weeks I employed with great success an instrument which I call a "fistula gimlet," which has been recently made for me (Fig. 20). It can be screwed into a very fine fistula and then forcibly drawn out, bringing with it the unhealthy granulations which line the fistulous tract and prevent its closure. In this case, the fistula closed at once after one such "gimlet curettage." The screw is made slanting so as to present cutting edges when drawn out without rotation. This trivial expedient, I believe, will prove of much use in hastening the closure of small fistulæ.

The presence of four cases of rectal fistulæ are results which I am extremely sorry to have to report. In two cases I am sure that no tear was made into the rectum at operation, as I made a careful examination to determine this before closing up. One of these patients had diabetes mellitus and the other was an extremely emaciated, weak old man. In the other two cases I am reasonably sure that the rectum was not torn into. One of these

patients was also very old, weak and emaciated, but the other was a sturdy subject, and we had every reason to expect his tissues to heal well. I believe that decubitus was responsible for the result in all cases, probably owing to too great pressure of the beak of the posterior retractor during operation, but possibly to an overabundance of gauze packing in the wound. Since having these bad results, I have been careful to place gauze only in the lateral cavities of the prostate, and not to allow any pressure to be made by it against the rectal wall.

In the fairly strong individual subsequent breaking down of the rectal wall ought never to occur; and, if one proceeds with care, hugs the bulb of the urethra, carefully divides the recto-urethralis muscle, which draws

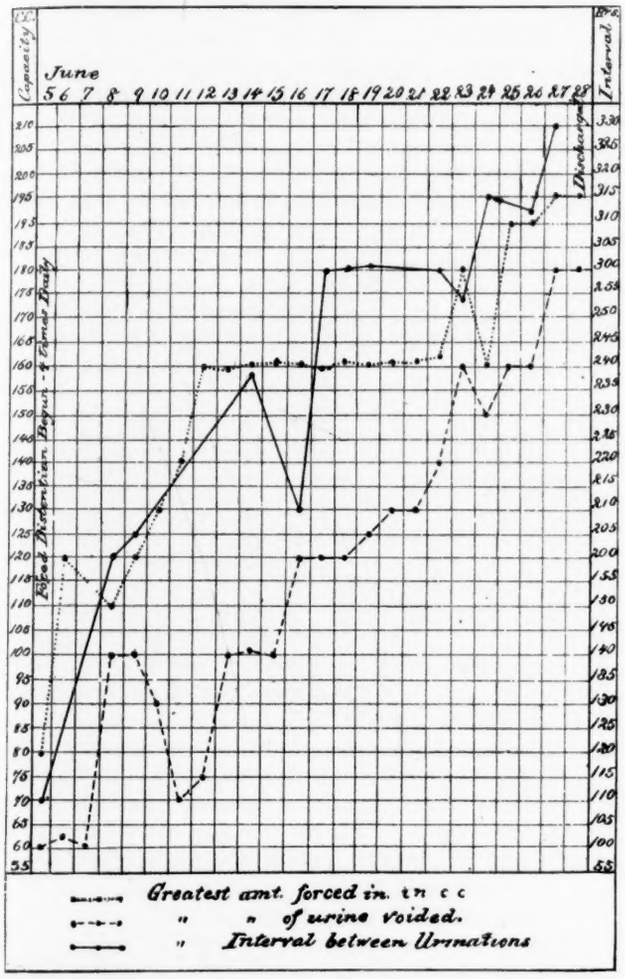

Fig. 19.—Chart showing dilatation of contracted bladder by hydraulic pressure.

the rectum forward, close to the membranous urethra and then retracts it with care, the rectum ought never to be injured in this operation. The great advantage in this anatomic technic is that it should be a safeguard against rectal injury and do away with the necessity of placing a finger in the rectum during the dissection, as is done by some.

In extremely feeble subjects, such as three of my patients were, decubitus may occur on slight provocation, and, on this account, the greatest care should be taken to give the rectum a wide berth and to avoid any great disturbance to its surrounding structures.

During the past five months I have been drawing the separated levator muscles together in front of the rectum, just before closing the skin wound, and during this time I have not had a case of rectal breakdown or fistula in about 25 cases. After the lobes have been enucleated and the rubber drains and the strip of gauze for each lateral cavity have been inserted, I draw a rubber glove on my right hand, insert the index finger into the rectum, and with the left index finger in the wound carefully examine the rectal wall by bidigital palpation. It is surprising to find how thin it is, as it lies in the bottom of the wound uncovered by the levators and it is easy to see how, if a mass of gauze is packed against it and no external muscular support is afforded (which it has normally), necrosis can occur, and fistula result. Rectourethral fistula has occurred after all the various methods of attacking the prostate through the perineum. Rydygier and Zuckerkandl, abroad, and Horwitz, Watson, Lydston and Morton of this country, have mentioned cases. It is the commonly accepted *bête noire* of the perineal route, has been since the days of the early lithotomists and will always remain so in the blind operations both of lithotomy and prostatectomy. I firmly believe, however, that if we see what we are doing, hug the bulb and the membranous urethra carefully, separate and push back the rectum with a broad flat retractor, pack only the lateral cavities and these lightly, and bring the levators together again in front of the rectum (restore the perineum, in fact), there will be no more cases of rectal fistula.

CONTINENCE OF URINE.

In many cases complete continence of urine is present as soon as the perineal tubes are withdrawn, the patient

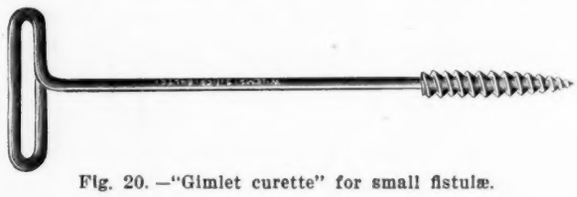

Fig. 20.—"Gimlet curette" for small fistulæ.

voiding urine through the wound voluntarily at stated intervals, and no incontinence being present. In other cases, slight incontinence may persist for a while, but it is generally weakness of the sphincters, appreciated only when the desire to urinate comes on. In only two of my cases does this persist, after seven months in both cases. In one, the interval between urinations is from five to seven hours, and in the other four hours. Neither have incontinence, but when the desire comes on there is likely to be a slight leakage unless the patient heeds the warning at once.

Only one case of even slight incontinence is present, and this is my oldest patient, a man of 83 years, who had a prostate weighing 240 grams, and a contracted bladder. He voids urine naturally at intervals of from 3 to 8 hours, but when the bladder becomes full, there is at times a slight involuntary escape of a little urine, but by wearing a small pad beneath a jock-strap, he is able to prevent any wetting of his clothes.

These results show that the incision into the membranous urethra does not weaken the sphincter and can not be considered an objectionable procedure. On the contrary, the direct dependent drainage provided through the urethrotomy is of very great value to both bladder and kidneys.

EPIDIDYMITIS.

This occurred in 12 out of 30 cases in Albarran's clinic, and led him to adopt the practice of ligating the vasa deferentia in the scrotum after completion of pros-

tatectomy. On this account Proust recommended ligation of the ampullæ of the vasa, back of the prostate, during operation, on the ground, in both cases, that the ejaculatory ducts, and along with them the sexual powers, had already been destroyed by the operation.

Epididymitis occurred among my 50 cases after operation—in two weeks in two cases, in three weeks in three cases, and after two months in one case. The bladder was infected in every case. In all these cases, only one side was involved, and four report that their sexual powers are now normal, and in one case I have found spermatozoa in the semen. In the past six months (during which I have removed the perineal drains in much shorter time), there has not been one epididymitis in about 20 cases. The preservation of the ejaculatory ducts intact and the abstention from instrumentation after operation seems well justified.

CONCLUSIONS.

In conclusion I may say, after about 200 operations for enlarged prostate, that perineal prostatectomy has proved, in my hands, the safest method for relieving prostatic obstruction; that it is a comparatively benign operation and can be employed in very aged patients (one was aged 85 years); that spinal anesthesia is a valuable adjuvant in feeble cases; that with appropriate retractors and tractor the prostate can be exposed almost by blunt dissection, no important structures being divided, and the enucleation of the enlarged lobes can be carried out under visual inspection in a shallow wound; that all forms of enlargement, even great intravesical middle lobes, can be drawn down and removed through the perineum, and generally without tearing the bladder, the urethra or the ejaculatory ducts; that the sexual *puissance* is thereby preserved in the majority of cases; that normal urination is established (may be after more than ten years of catheter life), and that incontinence is almost unknown; that the time has come for blind operations and the foolish fad of removing as much as possible of the prostatic urethra to end and for the surgery of the prostate to be done according to the dicta of modern surgery, under visual inspection and with due care of useful and non-obstructive tissues—the urethra and the ejaculatory ducts.

THE OPERATIVE TREATMENT OF CHRONIC SUPPURATION OF THE FRONTAL SINUS

WITH SPECIAL REFERENCE TO THE METHOD OF KILLIAN.*

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EDINBURGH.

The present aspect of surgical interference in chronic suppuration of the frontal sinus is, from several points of view, a subject of deep interest to all of us, and, along with the surgery of the other nasal sinuses, the history of its gradual development is a very engrossing one. In connection with the advances in this department Americans have taken a prominent place, in proof of which I need only mention the names of Holmes and Lothrop, Douglass and Mosher, Howard, Ingersoll, Pearce and Bryan.

INDICATIONS FOR OPENING THE SINUS.

Before discussing the lines of treatment which may be adopted it will be advisable to briefly consider the indications which should guide us in opening the sinus. Recently there has been a tendency, at any rate in some quarters, to follow more conservative methods, and perhaps to refrain from operative interference unless there is present some definite indication for so doing. The somewhat numerous fatalities which have occurred after operation, the fact that relapses are not infrequently met with, and the possibility of considerable disfigurement attending a radical procedure are all factors which must naturally cause the surgeon to weigh carefully the circumstances connected with each case before he urges operation on his patient. The time, I hope, may come when a more extended experience and improvements in our operative technic will make it possible for us to confidently recommend operation in every case, with the almost certain knowledge not only of obtaining a permanent cure, but of doing so with the smallest amount of disfigurement. In the meantime, however, we must recognize certain symptoms and local conditions which make surgical interference imperative; these are symptoms suggesting cerebral complication; pain usually of the nature of headache, which may be of a very severe and persistent type; distension of one of the bony walls of the cavity or the presence of a fistula discharging externally. If the general bodily health of the patient is evidently affected by the continued suppuration, or if he should suffer from great mental depression and anxiety regarding his condition, a state of affairs which sometimes exists in these cases, we should not refrain from urging the operation.

We frequently, however, meet with cases in which there are no symptoms present save a persistent nasal discharge of greater or lesser amount, which may cause comparatively little annoyance to the patient.

Are we to make it a routine practice to operate in all cases of this kind? Under circumstances such as these we should take the patient into our confidence, lay the pros and cons before him and leave the decision so far as possible in his own hands. In the event of his purposing to reside where surgical skill can not be readily obtained or if he meditates applying for life insurance, then our influence ought to be used in favor of operation. The question whether applicants for life insurance suffering from purulent discharge from one or more of the nasal accessory sinuses, should be accepted on ordinary terms has not hitherto received special attention. It is, however, a matter worthy of the consideration of the life assurance offices.

INTRACRANIAL COMPLICATIONS.

It seems to me that our attitude toward the class of cases in which a purulent discharge is practically the only symptom, would be considerably assisted by a better knowledge of the risk of the possible occurrence of intracranial complications.

Can we arrive at any definite conclusions regarding this? Opinions differ regarding the relative frequency of the onset of complications of this kind. Comprehensive data on the subject are difficult to obtain, consequently it is not easy to make a definite statement on the matter. It is true that since the publication of the valuable monograph of Dreyfuss in 1896 more attention has been paid to the nasal cavities as a primary seat of infection, but for a long time no systematic postmortem examination of the nose was made in cases of death from septic intracranial mischief. We have not here the same data to reason from as in the case of the ear, and a comparison between the relative frequency of the occur-

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904. This paper and that of Dr. Freudenthal were discussed together. The discussion and Dr. Freudenthal's paper will appear next week.

rence of endocranial complications following aural and nasal suppuration is hardly possible. The difficulty previously experienced in examining the accessory sinuses at the autopsy without disfiguring the face was doubtless one reason for overlooking this region. Possibly brain abscesses which have been regarded as "idiopathic," may have had their origin in nasal suppuration. All observers will, I think, agree in saying that suppurative middle ear disease is a more common affection than suppuration in the nasal accessory sinuses. This will still be admitted even if we exclude the large number of children among whom ear suppuration is so prevalent, a group of patients which can not fairly be used for comparison because the nasal sinuses have not yet developed. The statistics of most hospital clinics will, I think, prove this. A point which is less easy to determine is whether, granted that there are fewer cases of nasal sinus suppuration than of middle ear suppuration, does the same proportion of endocranial complications arise in the former as in the latter? Unfortunately we do not possess sufficient statistics to enable us to answer this with any degree of exactness.

The postmortem evidence of intracranial infection is somewhat meager. Newton Pitt,[1] who gives an analysis

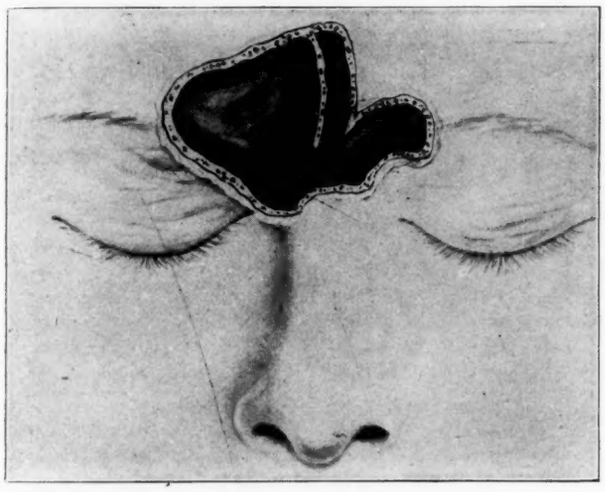

Fig. 1.—Right frontal sinus, showing mesial recess and extension above left eyebrow. Patient twice operated on unsuccessfully by opening and draining. (Ogston-Luc method.) Failure due to non-recognition of recesses.

of 9,000 autopsies, found only one case of cerebral abscess due to nasal suppuration; the patient had had nasal polypi and ethmoid disease. Gowers[2] considers that chronic nasal disease is an occasional but rare cause of cerebral abscess. He states that in 240 instances of brain abscess the nose was the primary seat of infection in six, but the sinuses implicated are not specified. Treitel[3] found in 6,000 postmortem examinations three cases in which the intracranial mischief had its origin in the nose, namely, two of cerebral abscess and one with purulent meningitis. Wertheim[4] had access to the records of 10,394 autopsies; among these were 127 cases of endocranial suppuration. Fourteen were stated to be of nasal origin, but in six only was the exact mode of infection specified. In only three of these again was the frontal sinus the probable primary source of the complication.

The above figures contrast with those obtained postmortem in connection with middle ear disease. Thus in Pitt's examinations there were 57 cases of intracranial mischief consequent on aural suppuration. In the 240 cases of brain abscess referred to by Gowers, 102 were secondary to ear disease. Of 21 brain abscesses occurring in Treitel's statistics, seven were otitic in origin.

As the subject of this paper relates to the frontal sinus only, we will restrict ourselves in discussing the clinical evidence bearing on this point to the complications arising in connection with that cavity. If the other sinuses were included in our figures the total would undoubtedly be considerably increased, as a number of fatalities have now been recorded in connection with the sphenoidal and ethmoidal cells. Owing to the fact that different writers on this subject repeat the observations of previous authors the same fatalities are recorded more than once, so that the real total is overestimated.

In 1895 Kuhnt, in his work on the frontal sinus, collected seventeen cases of intracranial complication associated with suppuration in that sinus. In twelve of these the frontal sinus only was diseased, while of the remaining five there was associated suppuration in other

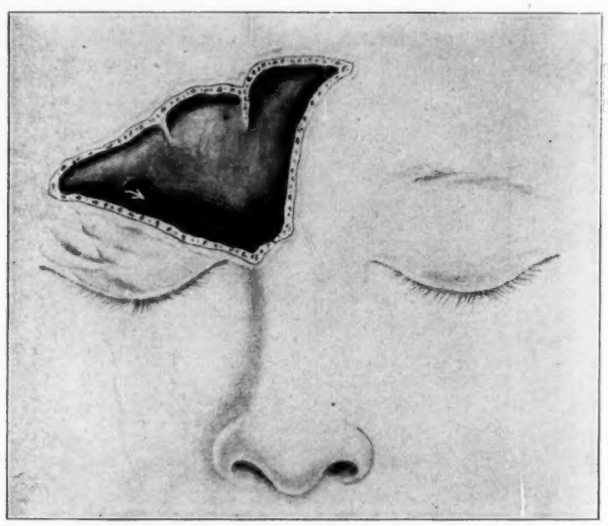

Fig. 2.—Right frontal sinus, showing orbital recess externally. Patient twice operated on unsuccessfully by opening and draining. (Ogston-Luc method.) Failure due to non-recognition of recess.

accessory cavities. Dreyfuss, in his monograph published in 1896, reported nineteen cases of a like nature following frontal sinus suppuration. These latter, however, are not to be regarded as being all additional to those reported by Kuhnt. Killian,[5] in his article on the frontal sinus, brings the total number of frontal sinus complications up to thirty. Since that date I have been able to add twelve additional cases not included in the statistics of the above named writers, making the total number forty-two.

So far as I have been able to ascertain, these are the main facts at our disposal, and therefore, unfortunately, we can not draw any definite conclusions as to the percentage of cases of frontal sinus suppuration in which intracranial complications arise. That they do occur there is ample evidence to show, and there is the possibility that they may even occur more frequently than the above figures would indicate. That, I think, is all that we can say, and looking, therefore, to this fact, it is our duty to keep in view the possibility of the occurrence of intracranial complications.

1. Brit. Med. Jour., vol. i, 1890.
2. Diseases of the Nervous System, 2d ed.
3. Berl. klin. Woch., No. 51, 1896.
4. Arch. f. Laryngol., 1901.
5. Heymann's Handbuch der Laryngologie, 1900.

INTRANASAL TREATMENT.

If we are not going to operate on our patient we must endeavor to maintain free drainage in the nose and not permit him to pass altogether from our observation. There is no doubt that in some cases the more aggravated symptoms are relieved and the state of the patient becomes more satisfactory when the intranasal condition is carefully attended to. If nasal polypi are thoroughly removed along with the anterior end of the middle turbinated bone, and the anterior ethmoidal cells opened into, better drainage may be established and the outflow of secretion rendered more easy. We have probably all seen cases in which the carrying out of this procedure has made the patient's condition more comfortable. In what proportion of cases a cure, as has been alleged, may result from intranasal treatment of this kind, is a matter which might form an interesting point for discussion. I am of the opinion that the number of such cases must be very small because both the anatomic configuration of the sinus and the pathologic changes which occur in its lining membrane in chronic suppuration militate against the chance of a cure merely from better drainage. It is necessary to bear in mind that the intranasal treatment outlined above should be carried out as a preliminary to an external operation on the sinus. Hajek,[6] however, takes a more favorable view of intranasal treatment; out of twenty-seven cases of chronic suppuration treated by intranasal methods, nine were completely cured; in eleven a mucopurulent secretion remained, while in seven no improvement was effected. In all of them, with three exceptions, the headaches disappeared. There were thus nine cases healed, while in eighteen the discharge continued. If, however, freer drainage from the sinus can be established in this way, it is possible that the risk of serious intracranial complications arising may be lessened.

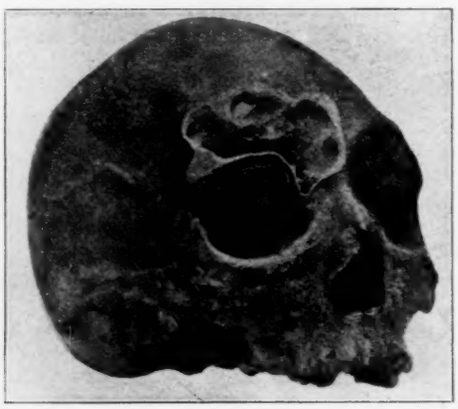

Fig. 3.—A large anterior ethmoidal cell is seen invading the orbital plate of the frontal bone and lying below the frontal sinus.

OPERATIVE PROCEDURES.

Having decided on operation, what procedure are we to adopt? Notwithstanding the numerous operations and their various modifications that have been described, many of which are associated with the names of different surgeons, there are only two main principles involved. First, the sinus is opened and drained into the nose, but its cavity is preserved; or secondly, the sinus is obliterated by the removal of one or more of its bony walls, so that there is no longer a cavity to deal with. If the first principle is adopted whatever be the precise mode of procedure, we still have a sinus remaining, which may subsequently become the seat of fresh infection. Little or no disfigurement follows this method of operating. If, however, we carry out the second principle and obliterate the sinus, we remove all possibility of further suppuration in this locality. At the same time by doing this we encounter a drawback, viz., a varying amount of disfigurement, which in this region of the body is one of no small moment and which sometimes, indeed, assumes very considerable proportions. The questions, therefore, which have to be considered are, what cases, if any, are suitable for treatment by preserving the sinus, and secondly, how may we best obliterate the cavity and at the same time produce the minimum of disfigurement. Again, can any method be adopted by which we may combine all the advantages associated with each of these procedures and at the same time eliminate their defects? These are the main points to which I would ask your consideration in this paper.

PRESERVATION OF THE SINUS.

The Ogston-Luc Operation.—It is quite unnecessary to present you with a detailed description of the operation so widely known under this title. Suffice it to say that it consists in opening the frontal sinus through its anterior wall, the size of the opening being relative to the dimensions of the cavity, in careful curetting of its interior and in establishing a large communication between the sinus and the nose, at the same time destroying the anterior ethmoidal cells in the region of the nasofrontal duct. Drainage into the nose is insured by the introduction of a strip of gauze through the nasofrontal aperture and the operation is completed by immediate suture of the skin incision.

Fig. 4.—Patient, young man, after opening and draining left frontal sinus. (Ogston-Luc.)

Probably no operation, or a slight modification of it, has been more generally accepted and performed on the frontal sinus, yet more extended experience and a careful consideration of the results obtained from it go to show that the class of cases which is really suitable for this procedure appears to be a comparatively small one. This is due mainly to anatomic causes. If we consider the variations in the configuration of the frontal sinus, its variable extension vertically as well as outward toward the temporal region, and, not the least important, backward along the roof of the orbit, we can readily appreciate the difficulty of thoroughly inspecting the cavity through a somewhat limited opening in its anterior wall. If we bear in mind, further, that the frontal sinus is not always a simple chamber, but, on account of the existence in many instances of incomplete bony septa and partitions in its interior giving rise to one or more

6. Nebenhöhlen der Nase, 2d ed., 1903.

diverticula or recesses, it is difficult, and sometimes even impossible, to deal effectively with the whole cavity in this operation. These recesses are commonly met with in the external angle of the sinus and frequently in its horizontal or orbital portion. Both these situations are from their anatomic position very difficult of access. In consequence of this, pus and diseased mucous membrane may be overlooked and foci are left to cause fresh infection of the surface which has been curetted. Recesses may also exist in the vicinity of the septum between the two sinuses, and the non-recognition of these may cause the operation to fail.

Figures 1 and 2 illustrate some of these points. Figure 1 is an example of a case in which a recess formed by a partition lying close to and parallel with the septum led to an unsuccessful result. The patient had been operated on by two surgeons by the Luc method, and I believe that on each occasion the narrow mesial recess was overlooked and proved to be the cause of subsequent reinfection of the whole sinus. It was not until the entire anterior wall was removed that its existence was determined. It was then found that in addition to this the cavity (right sinus) extended into the left supra-orbital region. This latter diverticulum had also doubtless been overlooked. Figure 2 represents another sinus

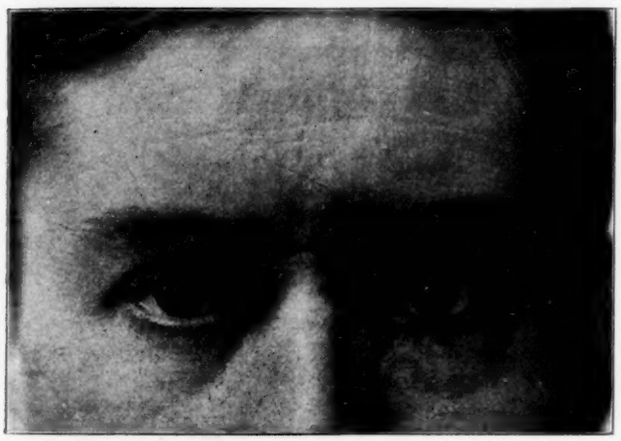

Fig. 5.—Patient, young man, after opening and draining left frontal sinus. (Ogston-Luc.)

which had been twice operated on without success by merely opening and draining the cavity. After removal of the whole anterior wall at a subsequent operation, a well-marked diverticulum was discovered in the external part of the horizontal portion of the cavity.

Another difficulty which may present itself and which, if not recognized, must obviously lead to the failure of the operation, is the existence of a communication between the two sinuses through the intervening septum. Such an intercommunication, although it may doubtless occur, is not a usual anatomic condition, and I have never observed the septum to be incomplete in the normal skull. As the result of a pathologic process, however, the communication is sometimes found in cases of chronic suppuration and the opposite sinus becomes infected through it. It may not be easy to recognize the existence of such a communication through the limited opening which is made in the Luc operation, consequently the opposite sinus continues to discharge its purulent contents into the cavity which one has attempted to render aseptic.

There is still another point which calls for attention, since it may prove a source of weakness in this method of operating, and that is the difficulty of gaining sufficient access to the anterior ethmoidal cells. In a proportion of cases one or more of these cells extends outward into the orbital roof beneath the floor of the frontal sinus. An example of this is seen in Figure 3. Under these circumstances considerable dissection not only of the anterior wall, but also of the floor of the sinus is necessary before these cells can be recognized. Suppuration in the ethmoidal cells may be concomitant of chronic suppuration in the frontal sinus. Consequently, in seeking to establish a free communication between the sinus and the nose, an attempt must be made to destroy or remove the diseased ethmoidal air spaces which may otherwise prove a source of reinfection. As we shall see later the importance of dealing with these, has led Killian to resect the ascending process of the superior maxilla and thus gain more ready access to them.

ASSOCIATION OF FRONTAL AND ETHMOIDAL SUPPURATION.

It will not be out of place at this stage to examine

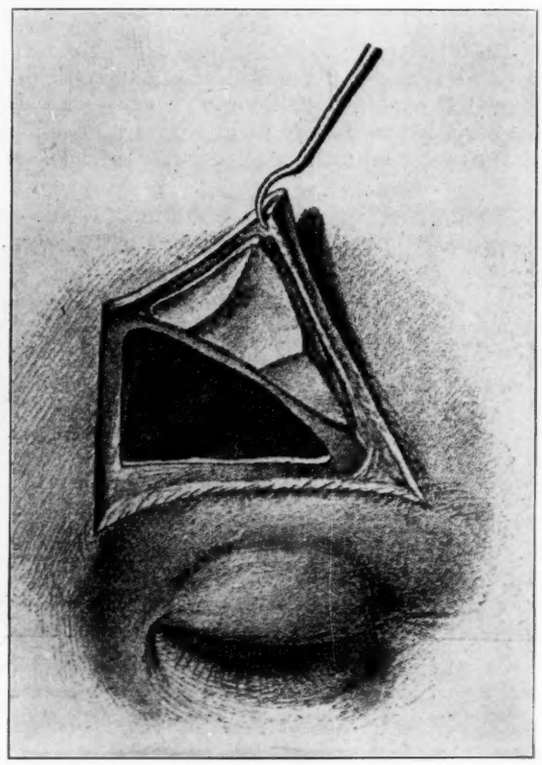

Fig. 6.—Osteoplastic operation on frontal sinus. Bone flap recommended by Hajek.

some of the published records bearing on the association of frontal and ethmoidal suppuration, and learn how frequently the two conditions coexist. When we come to study such figures as I have been able to obtain, relative to this point, we find that the experience of surgeons varies. Thus Jansen[7] in ten instances, Röpke[8] in thirty-seven, Killian[9] in sixteen and Luc[10] in four instances found the ethmoidal cells affected along with the frontal sinus. Walker Downie[11] in six cases has noted ethmoidal disease in five of them. On the other hand, Lermoyez[12] in thirty-six instances in which the frontal sinus was affected found only two with associated ethmoidal dis-

7. Arch. f. Laryngol., Berlin, 1894.
8. Jour. of Laryngol., London. 1899.
9. Arch. f. Laryngol., vol. xiii, No. 4, p. 1, 1902.
10. Ann. des Mal. de l'Oreille, December, 1902.
11. Glasgow Medical Journal, March, 1899.
12. Ann. des Mal. de l'Oreille, November, 1902.

ease; while Herbert Tilley[13] in twenty-five diseased frontal sinuses has noted six with ethmoidal suppuration. Milligan[14] has described in seventeen instances affection of the ethmoidal cells in nine, while of nineteen diseased frontal sinuses observed by myself the ethmoidal cells were also affected in eleven. In Wertheim's[15] postmortem observations the ethmoidal cells were found affected in seven out of twelve cases.

We find on adding these figures together that in 172 instances in which chronic suppuration of the frontal sinus existed the ethmoidal cells were implicated in 107—i. e., 62 per cent. In other words, in 40 per cent. or less than half of the total number of cases of chronic frontal sinus suppuration, the ethmoidal cells were healthy, a larger proportion than perhaps is generally believed. It is difficult, however, to assign a cause for the great disproportion observed between the figures recorded by such observers as Jansen, Röpke, Killian and Luc on the one hand and those of Lermoyez and Tilley on the other.

RESULTS OF THE LUC OPERATION.

We have thus far indicated the anatomic features which may conduce to the non-success of the Ogston-Luc operation. It is necessary, however, to consider whether clinical observations justify us in regarding this operative procedure in an unfavorable light. In endeavoring to collect reliable statistics on this point a difficulty was at once met with, namely, information as to the exact method adopted by each operator. The kind of drainage employed and the treatment of the skin flap must be regarded as factors of considerable moment in the success or non-success of the operation. It is obviously unfair to adversely criticise a recognized operative procedure when in some not unimportant details the operation has differed from the lines laid down by the originator of it. For this reason the figures which follow are not large, as I have limited myself to those cases which undoubtedly appear to have been treated by the Ogston-Luc method. They may possibly be considered by some to afford a too limited basis for reliable deductions to be drawn from them. In all there are fifty-five cases. Of these seventeen are reported by Lermoyez[12] in the paper already referred to, nine of which were cured and eight relapsed. Lambert Lack,[16] who does not take a favorable view of this operation, treated eleven cases by this method, not one of which was completely successful. In four of them headache and pain were relieved, but the discharge, although much diminished, continued. In five no relief was obtained. Two cases terminated fatally. Luc himself has been disappointed with his results, having found it necessary to operate again more than once in some of his cases. An analysis of ten cases which came under my own care shows that six were completely successful. The cavity in all of these did not exceed ordinary dimensions, and in two of them it was of specially small size. In two there was also associated ethmoidal suppuration. Of the four unsuccessful cases, one had associated ethmoidal disease, while two others had been already operated on twice; neither of these had ethmoidal suppuration.

We find, however, that the operation has met with more success in some hands. Kuhnt[17] operated successfully in three cases, Grünwald[18] had six cases all successful, while Barbor and Furet[19] had no failures in eight cases. In summarizing these fifty-five cases we find that there are thirty-two cures and twenty-three failures, that is to say, a percentage of 58 successful operations. We shall see later how these results compare with the statistics of the obliteration method. Luc[10] himself now admits that the operation associated with his name has not given general satisfaction either in his own hands or in the hands of other operators. He considers it an ideal operation, however, only in certain cases, namely, when the dimensions of the sinus are limited, provided that the fronto-nasal canal is roomy, when the ethmoidal labyrinth is free from suppuration, and lastly, when the inflammation without being actually acute, has not persisted for more than a few months.

Fig. 7.—Patient, woman, two months after radical operation on large left frontal sinus (Killian method). A vertical incision was found necessary.

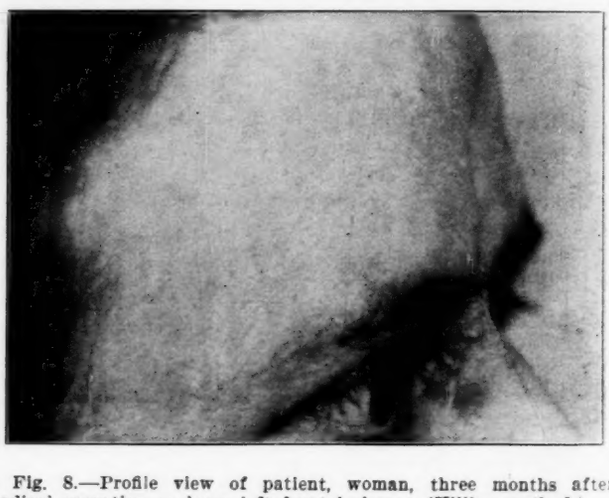

Fig. 8.—Profile view of patient, woman, three months after radical operation on large left frontal sinus. (Killian method.)

OPERATION FOR OBLITERATING THE SINUS. THE METHOD OF KUHNT.

Both anatomic and clinical evidence appear to be against the performance of an operation which does not permit of thorough inspection of the sinus and of the possibility of establishing a free communication with the nasal cavity by destroying the anterior ethmoidal cells should they also be diseased. In the majority of cases,

13. The Lancet, London, July, 1900, and Trans. London Lar. Soc., March 4, 1904.
14. The Lancet, London, February, 1898.
15. Arch. f. Laryngol., vol. ii, No. 4, p. 2, Berlin, 1901.
16. Edinburgh Med. Jour., vol. xi, 1902.
17. Die entzündlichen Erkrankungen der Stirnhöhlen, 1895.
18. Die Nasenelterungen.
19. Ann. des Malad. de l'Oreille, June, 1899.

therefore, we must seek for an alternative procedure by the carrying out of which the chances of failure and the risks of fatality are diminished. Experience goes to show that this is to be attained by obliterating the cavity of the sinus. In order to bring this about it is necessary to remove the whole of its anterior wall and also to a greater or less extent its floor. The removal of the floor is a valuable addition to the operation, I think, in those cases in which there is considerable extension of the sinus along the orbital roof. The removal of all the bone between the sinus and the soft tissues of the orbit is a guarantee that any ethmoidal cell extension into the roof of the orbit has been destroyed. Some operators, however, consider the removal of the osseous floor unnecessary. By this radical procedure we are able to thoroughly inspect the whole interior of the cavity, however large it may be, and no recesses can escape our observation. Further, the septum between the two cavities may be examined, and, as I have already said, the presence of ethmoidal cell extension into the orbital roof will thus not be overlooked. By this means also easier access is obtained to the ostium frontale and the diseased ethmoidal labyrinth may be more freely dealt with. Finally, we have the satisfaction of knowing that there is no longer a frontal sinus in which to fear recurrence of suppuration. In other words, therefore, if an operation of this kind, or some slight modification of it, such as the individual operator may think fit to apply, be performed, we eliminate all the defects and weaknesses of the less radical procedure.

If we now consider the curative results from the more radical methods, that is to say, in those cases in which the cavity of the sinus is obliterated, we find that the figures compare very favorably with those obtained after the Luc operation. My statistics are based on the results obtained in sixty-seven cases. Kuhnt has reported ten successes in ten cases operated on, and Röpke[8] was successful in all of his twenty-five cases. Lermoyez[12] had eleven cures in eleven cases of chronic fontal sinus suppuration; five of these had been operated on by the Ogston-Luc method, but had had recurrence of suppuration in the cavity. Lambert Lack[16] operated successfully in nine cases, and expresses the opinion that this method of dealing with the sinus is the most reliable. Hajek[6] obtained eight cures in nine cases, and Herbert Tilley[13] has recently published three cases, in all of which ethmoidal suppuration was present, and in which an excellent result was obtained. Of the sixty-seven cases here referred to a cure was effected in all but one, thus showing a very marked difference in the results as compared with the percentage of cures by the previous method. These figures are striking and though the total number of cases recorded here is not large, yet collectively they furnish sufficient evidence as to the respective merits of the two operations, so far, at any rate, as regards the cure of the condition. The question of comparative cosmetic results will be discussed later.

POSTOPERATIVE MORTALITY.

The comparison of the relative value of the two methods of operating is not complete, however, without consideration of the fatalities which have occurred after operative interference. Probably there are few surgeons, experienced in dealing with this class of cases, who have not had the misfortune either to lose a patient themselves, or to see a fatal result occur in the practice of one of their colleagues. A very considerable number of deaths have followed operation on the frontal sinus, and on that account we must necessarily regard it as one of the major operations in surgery. It is impossible to state with any degree of certainty how many fatalities have occurred, as there must be many cases which remain unrecorded. I have succeeded in collecting twenty-four, in which death followed operation on the frontal sinus. Of these sixteen have already been published, while I have information regarding eight others. Possibly others have been published, but I have not been able to obtain access to the literature dealing with them. The fatalities have been recorded by Luc,[20] Lermoyez,[12] Tilley,[21] Lack,[16] Rudloff,[22] Jaques,[23] Knapp,[24] Gibson,[25] Thiele,[26] Bryan and Gruening.[27] It is possible that in the cases reported by the two last mentioned observers the infection may have spread to the intracranial structures from the ethmoid cells, which were affected along with the frontal sinus.

The clinical picture presented by the majority of these cases is very similar. The infection which finally leads to the fatal result occurs, I think, at or within two or three days of the operation. The diploë of the frontal bone is invaded by the organisms and an osteomyelitis is in the first place set up. The infection spreads thence, on the one hand, through the outer table of the bone, giving rise to subperiosteal abscesses beneath the scalp; on the other hand it passes inward and may subsequently give rise to extradural or subdural abscess, general meningitis or cerebral abscess, the patient succumbing to one or more of these conditions, or to a general senticemia or pyemia after a varying number of weeks or months. Once an osteomyelitis of the frontal bone has become established, the prospect of cure by surgical interference is apparently hopeless. It commences insidiously and before the general symptoms and local signs are such as to permit of an exact diagnosis being arrived at the disease in the bone has made considerable progress. Even the most active treatment and apparently thorough removal of the bone in the neighborhood of the sinus fails to stem the slow but steady advance of the inflammatory process. In a case of this nature occurring under my own care no untoward symptoms supervened until the tenth day after the operation, when the temperature, which was previously normal, suddenly rose and some edema of the scalp was visible above the limits of the sinus. Subperiosteal and extradural abscesses formed and in spite of extensive removal of the frontal bone the patient finally died from pyemia after three months' illness. In Tilley's[13] case also symptoms developed ten days after the operation on the sinus and death took place after a protracted illness lasting for nine months.

An analysis of the fatal cases affords instructive reading when considered from the point of view of the nature of the operation performed. Of the twenty-four fatal cases there are twenty-three in which I have information regarding the operative procedure adopted. Of these seventeen, or 74 per cent., occurred after opening and draining the sinus (Ogston-Luc). Further analysis of this number brings out the fact that in fifteen death followed a single operation, while in two, more than one operation had been performed owing to the failure of the first to effect a cure of the suppurative condition. Of the remaining six of which we have notes all proved fatal after an operation for obliteration of the sinus, i. e., 26

20. Arch. de Laryngol., Jour. of Laryngol., 1899.
21. The Lancet, August, 1899.
22. Jour. of Laryngol., 1899.
23. Rev. Hebd. de Laryngol., August, 1903.
24. Arch. of Otology, 1903.
25. Ann. Jour. Med. Ses.
26. Arch. f. Laryngol., vol. iv, No. 3, 1903.
27. N. Y. Med. Record, 1904.

per cent.; in three of these, however, simple opening and draining had been previously performed without success, the more radical method having been a secondary procedure. It is evident, therefore, that a considerably larger proportion of fatalities have occurred after the Ogston-Luc operation than after the operation of obliteration. I think that the question of a second operation on the same patient is one of some importance relative to the mortality. We naturally ask ourselves, Is the patient placed in a worse condition for further interference if the previous operation has proved a failure? Of the comparatively small number of fatalities quoted above, no fewer than five of the patients had been subjected to two or more operations by the Luc method. Three of these subsequently underwent the obliteration operation and died. I am, therefore, inclined to think that multiple operations exercise a detrimental effect, although we know of cases which have successfully undergone the simpler procedure and have been finally cured by more radical methods.

The presence of a discharging fistula in the forehead as the result of failure to cure the sinus suppuration must place the patient in a less satisfactory condition for further interference than if the skin remains unbroken. In the fatal case under my own care, to which I have already referred, there remained as the result of two unsuccessful Luc operations a permanent fistula in the line of the eyebrow discharging pus. At intervals there was considerable phlegmonous swelling of the scalp covering the lower part of the forehead, and it is possible that the bone forming the anterior wall of the sinus had already become the seat of septic infection. If we can satisfy ourselves that a patient in this condition is more prone to such fatal complications as we have enumerated, and if further operative measures are undertaken, then we have still another argument against the Ogston-Luc procedure. Not only does it give a greater number of failures, but it jeopardizes the non-successful case which will subsequently require more radical treatment.

In order to avoid the occurrence of such fatalities it is very necessary to try and determine when and how the infection takes place which leads to the spread of the septic process. A careful study of failures in the past should be the stepping-stone to future success.

I am of the opinion that in those unfortunate cases in which death results the inflammatory condition is lit up during the operation. The granulation tissue in the sinus which has hitherto formed a barrier to the invasion of the organism is broken down, and thus a path is opened which readily admits of their further spread in the frontal bone. I am now in the habit of using small flushing spoons while removing the diseased mucous membrane, a constant stream of warm sterile saline or boracic acid solution thus constantly playing on the surface of the bone. In this way an attempt is made to remove all septic material at once from the wound and thus to lessen the risk of further spread. If the patient's head is at the same time kept dependent the lotion readily flows over the vertex, so that the eyes are not exposed to the risk of infection. When curetting of the sinus is not complete we have a state of affairs present which must necessarily increase the chance of a dangerous complication arising. Foci of septic material are left, which may readily contaminate the newly exposed bone in the neighborhood. It is possible, as Lack has suggested, that the organisms may invade the anterior osseous wall of the sinus and thence spread directly into the vertical portion of the frontal bone. The density of the bone forming the anterior wall of the sinus varies considerably and in some instances presents a markedly diploic appearance. In neither of Lack's fatal cases was the mucous membrane of the sinus curetted, yet an osteomyelitis of the frontal bone supervened and death followed from intracranial complications. Tilley blames defective drainage into the nose, coupled with complete closure of the skin incision, as causes of disaster in these cases. Most surgeons will probably agree with the necessity of establishing free drainage, a point which has from time to time been insisted on by the majority of writers on the subject. In two of the unpublished fatal cases the operator informs me that no sutures were placed in the skin incision. In one case he attributes the fatal result to defective nasal drainage; in the other, numerous ethmoidal cells extending into the orbital roof were overlooked and bone sepsis was thus set up.

Do statistics show that the mortality occurring after operation is less in the last two or three years than it was previously? Is a riper experience leading to uniformly better results? While I think we may certainly answer the second question in the affirmative, one must admit that of the twenty-four fatal cases which have formed a basis for my remarks, no fewer than nine have occurred during the last two years. It is not my intention to overestimate the grave risks which may attend operation on the frontal sinus, nor would I have it inferred that because any one procedure has been followed by a certain number of fatalities that consequently it must no longer be attempted in suitable cases. Further, unfortunate accidents of this nature should not lead us to decline to operate on our patients should they desire relief at our hands. On the contrary, our failures should stimulate us to better work, because there is no better school than the school of experience. They should be the means of insuring more certain success in the future and we should do all in our power to improve our operative technic and at the same time be careful to carry out the most rigid asepsis in its minutest detail.

DISFIGUREMENT.

There is, however, another very important aspect of this subject, and that is the question of disfigurement. No operation on the frontal sinus can be undertaken without this point presenting itself, and it is mainly for this reason that the subject has been so much debated. Were it not for this important consideration, much that has been published on the surgery of the frontal sinus would never have been written. If the surgeon is given a free hand by his patient and is asked to effect a cure regardless of disfigurement, there is no question that he will prefer to obliterate the sinus entirely and thus make any further trouble impossible. It is only occasionally, however, that the position of affairs is so satisfactory, the question of age, sex and social relations as a rule playing an important part. Consequently it is our duty to seek to obtain the maximum amount of success with the minimum of disfigurement. There is no doubt about the cosmetic advantages of the operation performed according to the method first practiced by Ogston-Luc. The preservation of the anterior wall of the sinus and the immediate closure of the eyebrow incision may be followed by such excellent results that in the course of time it may be impossible to observe any difference between the two sides of the face. Figures 4 and 5 illustrate patients whom I have operated on by the Luc method. It is unfortunate that equally satisfactory curative results can not always be obtained by this procedure.

With the obliteration of the sinus, on the other hand,

and the necessary removal of its anterior osseous wall, the contour of the forehead is to a certain extent destroyed. There consequently follows a greater or lesser degree of disfigurement, depending more on the antero-posterior depth of the cavity than on its superficial extent. The deeper the sinus the greater is the amount of the sinking in of the overlying soft tissues, and consequently the more pronounced is the subsequent depression. There is, however, undoubtedly considerable difference to be observed in the results obtained, a difference depending partly on the natural contour of the forehead in different individuals, the depth of the sinus and undoubtedly also on the possibility of the surgeon being able to leave more of the bony floor in one case than in another. As regards the skin incisions, if made in the line of the eyebrows, or even when a vertical incision is employed in one of the natural hollows, they are practically invisible, so excellent is the healing in this vascular region.

It is sometimes advanced as an argument against interference with the osseous floor of the sinus that diplopia or double vision may be produced from interference with the pulley attachment of the superior oblique muscle. This complication undoubtedly occurs in some cases. In one case detachment of the pulley may be followed by temporary interference with vision; in another no such effect is produced. It does not, however, as a rule, appear to be more than a transitory complication, and we must not regard it in the light of a contraindication to radical treatment. My own experience would lead me rather to regard detachment of the superior oblique muscle in a less serious light than some have done.

We have now discussed more or less thoroughly the arguments for and against carrying out one or other of the two principles formulated in the early part of this paper. We naturally ask ourselves whether there is not some procedure which will give us all the advantages which attend the obliteration method of operating and which will, at the same time, give as nearly as possible the excellent cosmetic results obtained by the method associated with the name of Luc. Such an operation, if applicable to every case, would certainly be ideal and would terminate the many discussions which have been held on this subject.

OSTEOPLASTIC OPERATION.

By means of an osteoplastic operation an attempt has been made to overcome some of the difficulties, and Schönhorn, Czerny, Brieger and Winkler have practiced such a procedure by raising a bone flap from the anterior wall of the sinus. Hajek,[6] too, describes this method as the one which he has frequently adopted. Having previously defined the limits of the cavity by means of the *x*-rays, he proceeds to raise a triangular flap of bone from the anterior wall along with the superimposed soft parts as illustrated in Figure 6, taken from his work. Good inspection of the interior of the sinus is thus obtained and the small pockets and recesses can be dealt with. In order to gain access to and deal with the anterior ethmoidal cells; he has found it necessary to partially resect the nasal process of the frontal bone, and he finally completes the operation by introducing a large drainage tube into the nose. The bone flap with its superficial covering is replaced and the drainage tube is worn for a period varying from six to twelve weeks.

In a sinus treated in this manner the healing process is necessarily slow, considerable time being required before the new epithelium completely covers the interior of the cavity. The cosmetic results are good, but as the sinus is not obliterated there still remains the possibility of reinfection. Hajek does not give any detailed account of his results, but merely states that since he adopted this method of operating they have been better. He carefully guards against making any definite pronouncement regarding the value of the procedure or as to the duration of the cure after osteoplastic resection. In two of his cases operated on in this way and treated for some months, recurrence of suppuration took place eight and nine months respectively after the operation.

KILLIAN'S OPERATION.

There still remains for our consideration another procedure which, although first described in 1895,[28] has only recently come more prominently before our notice.[9] I refer to the operation which is associated with the name of Gustave Killian of Freiburg. In the author's opinion it fulfills the two main requirements in these cases more than any other method does, namely, the radical treatment of the disease with a minimum of disfigurement. Satisfied on these points himself, Killian is prepared to recommend and carry out treatment even in cases of suppuration where there is no discomfort experienced by the patient beyond the presence of slight nasal discharge. Should a more general and extended experience prove equally satisfactory, it is possible that in the "Killian operation" we have at last obtained a method of dealing with chronic frontal sinus suppuration in large and complicated cavities, which may be regarded as the method par excellence.

The whole sinus with its recesses and partitions is thoroughly inspected and the cavity is almost completely obliterated by the resection of its anterior and inferior bony walls. Further, by the removal of the ascending or frontal process of the superior maxilla, excellent access is obtained to the ethmoidal cells and a large opening of communication is thus made between the frontal sinus and the nasal cavity, so that good drainage through the nose can be established. In order to reduce to a minimum the deformity which may follow so extensive a dissection, the supraorbital bony margin is preserved as a bridge between the gap formed by the removal of the anterior sinus wall on the one hand and the floor on the other.

The results of this procedure have apparently proved eminently satisfactory both as regards the cure of the condition and the final cosmetic appearances. This has been the case not only in Killian's own hands, but also in the hands of others who have employed it. Thus we find that of twelve cases operated on in this way by him all, with but one exception, healed satisfactorily. The failure was due to the fact that the opposite sinus discharged through an aperture in the septum and so reinfected the area of operation. After this had been attended to a cure resulted, so that we may regard all the twelve cases as successful. Luc,[10] who has of late adopted this method of operating, informs me that of ten cases treated in this way nine were cured. In the tenth a fistula remained at the inner end of the scar, which he was unable to close owing to the patient being obliged to leave Paris. Thiele[26] reports six cases; in four a cure was obtained after one operation; in one, owing to failure in removing a part of the floor of the sinus and a pocket being thus left, a second operation was necessary, but at the time of writing sufficient time had not elapsed to admit of his recording it as a satisfactory result. In the remaining case death occurred

28. Münch. med. Woch., No. 28, 1895.

apparently from meningitis four days after the operation. This case is included among the deaths already referred to. Siebenmann[29] has been thoroughly satisfied with the results which he has obtained by this method. In a case operated on by myself a few months ago an excellent result has been obtained. Of the twenty-nine cases above specified in which Killian's method was practiced, twenty-six were cured, or 83 per cent.

The cosmetic results have also proved to be very encouraging. By leaving the supraorbital margin, the contour of the eyebrow is preserved and the depression which attends complete removal of the anterior and inferior walls of the sinus is undoubtedly minimized. Killian considers that there is less disfigurement after the removal of both the anterior and inferior walls than when the anterior only is resected. The orbital tissues take a considerable share in the filling up of the sinus area, so that the sinking in of the soft parts covering the vertical portion of the sinus is thereby reduced. One can not fail to be struck while carrying out the operation, both in the living and on the cadaver, with the ready manner in which the orbital fat rises up into the horizontal part of the cavity on removal of the bony floor of the sinus.

If the cavity is a deep one it is impossible to avoid some degree of flattening above the supraorbital margin; in order to diminish this as far as possible it is advisable to bevel the cut edge of the anterior wall at the upper margin of the sinus. In some cases where the sinus is deep and the septum between the two cavities is consequently prominent, the scalp may not fall satisfactorily against the posterior osseous wall of the sinus, so that a small cavity may persist in this situation. When the operation is performed on both frontal sinuses Killian advises the removal of the intervening septum on the ground that the depression which follows presents a more uniform appearance than when the septal ridge is preserved. Both Luc and Thiele comment favorably on the cosmetic results in their cases. Figures 7 and 8 represent a patient as seen three months after operation and the disfigurement is not marked. The removal of the ascending process of the superior maxilla does not lead to deformity. It has been urged against the Killian method that the incision carried downward on to the face is a disadvantage, but the skin wound there, like a vertical incision on the forehead which is sometimes practiced in frontal sinus operations, heals so readily that no appreciable scar is left.

The remarks which we have already made regarding the occurrence of diplopia apply equally in this connection. It may occur as a temporary drawback, but I am inclined to the opinion that there is an exaggerated fear regarding the production of this complication. Killian met with slight transient iritis in three of his cases, but by the prophylactic use of atropin this can be avoided. I have never met with this complication after extensive operations on the sinus. Great care, however, should be taken to handle the eye as little as possible and to avoid any undue pressure on it. The operation no doubt exposes the eye to the risk of injury and is more delicate to execute, is more laborious, and also occupies a longer time, but if better cosmetic results and a permanent cure can be obtained by it, such disadvantages must not be regarded as contraindications.

If exception is to be taken to any one point in the procedure, it seems to me that it lies in the fact that the cavity is not completely obliterated. A space remains behind the inner end of the bridge which continues to secrete and discharge a certain quantity of pus until a new lining membrane growing upward from the nasal cavity has completely covered the granulations. It is true that this cavity is merely a diverticulum of the nasal chamber and is accessible from it, but it prolongs the healing process, and two, three or more months may elapse before that is completed. Luc pays considerable attention to the after-treatment of these cases. The crusts which form in the frontonasal region are removed daily and a tampon of wool soaked in peroxid of hydrogen or in a weak iodin solution is carried upward into the cavity which is left. He lays considerable stress on the necessity of keeping the scalp in close apposition with the posterior wall of the sinus by means of a firm bandage maintained for a considerable period of time, a procedure which I would certainly indorse. It is very necessary that this apposition of surfaces should be accurate, so that the upper part of the cavity may be completely obliterated.

29. Arch. f. Laryngol., vol. xv, 1904.

GENERAL CONCLUSIONS.

Certain general conclusions may be drawn from a study of this subject. In the first place it will be admitted, I think, that there is no single method of procedure applicable to all cases of chronic suppuration in the frontal sinus. When the sinus is a small one and we feel confident that we have thoroughly inspected it through the aperture made in the anterior wall, and when no ethmoidal disease coexists, simple opening and draining by the Ogston-Luc method may prove satisfactory. In these cases it is very necessary to insure a permanent communication between the sinus and the nose. On the other hand, we may prefer to obliterate such a cavity without incurring the risk of much disfigurement. In every other class of cases I would recommend and practice obliteration of the sinus.

The whole cavity may thus be thoroughly inspected and its recesses and bony partitions dealt with; better access to the ethmoidal cells may at the same time be obtained and a large communication made with the nose by resecting the frontal process of the superior maxilla. If the sinus is shallow and the supraorbital region is not prominent, it is unnecessary to preserve the bridge of bone. If more extended experience will show that the operation suggested by Killian provides satisfactory curative results with less disfigurement than is associated with other radical methods, then we probably have at our command an operative procedure which will take the first place. Whatever be the exact radical procedure adopted, there is no doubt of the value of removing the ascending process of the superior maxilla in order to gain better access to the ethmoid labyrinth and nasal cavity.

I am fully aware of the fact that this paper can not be regarded as a complete exposition of the subject. There are some points which have only been briefly touched on, and there are others which have not been considered at all. I have endeavored to place before you the broad principles which should guide us in dealing with these important and often troublesome cases. Questions of detail depend to some extent on individual operators and are points which may be conveniently taken up in the subsequent discussion.

It seems to me that the time has come when a collective investigation into the results of surgical interference on the frontal sinus and possibly also on the antrum might prove of the greatest value. Lack of sufficient opportunity has hitherto prevented me from undertaking

this, but if we could obtain a really accurate report of the chronicity of the cases, the number of sinuses affected, the surgical method employed in operating, the treatment of the wound and the results obtained as regards cure, relapse, the amount of disfigurement produced and a fatal issue, we would possess a valuable guide for our future work. The statistics which I have quoted here are of a somewhat fragmentary nature and are gathered from the work of a comparatively small number of men. Perhaps the time is not far distant when we may be the fortunate possessors of the information to which I refer. It should be the aim of all of us to so perfect our methods that we are able to operate on every patient with frontal sinus suppuration, confident that we will effect a cure with the minimum of disfigurement.

In conclusion I wish to acknowledge the valuable assistance which I have received from my friend, Mr. John Grieve, in the preparation of a number of my photographs, and to express my thanks to Prof. D. J. Cunningham of the University of Edinburgh for the opportunity kindly afforded me for dissection on the cadaver.

DEMENTIA PRÆCOX.*

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PHILADELPHIA.

In the writings of some of the earlier authors, notably Pinel, Spurzheim and Esquirol, we find that they recognized the affection now so widely known as dementia præcox. This recognition was, to be sure, vague and imperfect; the affection was naturally confounded with other dementias, paretic, organic and alcoholic and yet these early writers were aware that there was a form of idiocy which was not congenital, and which supervened only after the organism had attained a certain degree of development. Spurzheim, for instance, speaks of an "accidental idiocy," while Esquirol speaks of "accidental and acquired" idiocy; thus the latter says that there are children who are very well at birth, who increase in stature at the same time that their intelligence develops and who are very sensitive, lively, irritable, passionate and possessed of a brilliant imagination, a developed intelligence and an active spirit. This activity, not being in relation to the physical strength, these creatures use themselves up, they rapidly exhaust themselves, the intelligence becomes stationary, they acquire nothing more, the hopes to which have given rise vanish, while they finally pass into a terminal period of dementia. Subsequent writers recognized similar conditions, e. g., Rousseau and Moreau, though the former regarded primary dementia of the period of puberty as very rare, while the latter declares that such cases (early mental maturity and later idiocy) are very frequent. Morel,[1] under the title of "Hereditary Insanity, with Limited Intellectual Existence, Tendencies, Precocious and Innate to Disease, Transition to Idiotism, the most Irremediable, under the Influence of Certain Intercurrent Causes, etc.," describes cases which clearly belong to the hebephrenic or simple form of dementia præcox, and in commenting upon them, he says that a sudden immobilization of all of the faculties, *une démence précoce*, indicates that the young subjects have reached the termination of the intellectual lives of which they are capable. They live intellectually only up to a certain age, after which arrest takes place and they fall progressively into a state which he can only compare to idiocy. To Morel belongs the credit of having first made use of the expressive designation *démence précoce*, and it was Arnold Pick of Prague who first employed its Latin equivalent, *dementia præcox*, now so largely used. Pick described a number of cases clearly belonging to this group of affections.

It is not necessary to dwell here on the epoch-making studies of Kahlbaum, who first differentiated hebephrenia and catatonia (1863, 1874) from the great mass of demented cases, nor is it necessary to speak of Hecker's historical study of hebephrenia (1877). Time and the object of this paper also forbid comment on the writings of subsequent authors.

There is one author, however, whose name must be mentioned, for he has made the domain of dementia præcox peculiarly his own. His views, novel and striking, at one and the same time excite our admiration and challenge our criticism. It was Kraepelin who first gave to the term dementia præcox a broad interpretation. His point of view appears to have been reached by a process of gradual development. In the fifth edition of his Psychiatry, he still makes use of the term dementia præcox as designating a form of mental disease practically the equivalent of the hebephrenia of Hecker and Kahlbaum, and he limits the term to this designation. In this edition (the fifth) catatonia is still treated separately and not embraced under the heading of dementia præcox, and the like treatment is accorded to dementia paranoides. In the sixth edition, however, of his work, Kraepelin greatly expands the term dementia præcox; in fact, he gives it a new meaning. He no longer describes a specific form under this name, but applies it equally to hebephrenia, catatonia and dementia paranoides; in other words, these diseases are now treated by him as only so many different forms of one affection. It is difficult to speak in moderate terms of the value and importance of this brilliant generalization. It has served to greatly reduce the difficulty of study and classification, and even of prognosis. Furthermore, it has enabled us to give to certain symptoms a fundamental value and to others a value merely secondary—in other words, to properly co-ordinate related facts.

However, this change, and the present status of the subject, makes it imperative that certain important points should be considered. To begin, the name itself, dementia præcox, demands discussion. The term "dementia" implies of necessity a downward or degenerative process; in the psychiatric mind it is associated with the mass of hopeless terminal demented states which are met with in the asylums, and yet, as a matter of fact, it is known that a history of persistent or permanent mental loss by no means always obtains in dementia præcox. Every asylum will bear witness to the fact that cases of hebephrenia and catatonia do recover, while even a larger percentage of recoveries (among hebephrenics) is noted among the milder cases, whose condition does not demand asylum commitment, i. e., the extra-mural cases. While it is true that in the great majority a hopeless dementia is the final outcome, still Kraepelin himself admits a not small percentage of recoveries, 8 per cent. for hebephrenics and as high as 20 per cent. for cata-

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Traité de Maladies Mentales, pp. 562 to 566.

tonics—though he considers the possibility of recurrences.

If recovery takes place at all in dementia præcox, surely the term dementia is inappropriate; the objection to its use is not only scientific but ethical. Far better is it to employ a term such as *das Jugendirresein* of German writers,[2] a term the English equivalent of which is the insanity of youth, or better still, the insanity of adolescence. The term dementia præcox conveys, in its very sound, an unfavorable prognosis; not so with the term insanity of adolescence. This presupposes nothing as regards the future, and leaves the question of recovery to be determined by the course of the case; sentence is not pronounced on the patient at the time of the making of the diagnosis, but is charitably as well as scientifically withheld. Finally, the fact that youthful patients are also liable to suffer from the various infectious or toxic psychoses and to manic-depressive insanity can offer no objection to confining the term insanity of adolescence to the field occupied by hebephrenia, catatonia and dementia paranoides. Neither the infectious and toxic insanities nor the manic-depressive form are peculiar to youth. Further they already have distinguishing appellations.

Another point of importance is the use of the term hebephrenia. Hebephrenia implies of necessity a disease of puberty, and while there can be no doubt that the time at, near or about this epoch is the most favorable period for the development of this affection, it is equally well established that hebephrenia may occur much later. Furthermore, the term hebephrenia is apt to convey to the mind of the student that there are special and distinguishing features presented by its history and symptoms, whereas it is in reality the simple expression of dementia præcox, and it should be so designated. It is certainly far less confusing to the mind of the student to speak of the simple form of dementia præcox or insanity of adolescence than to speak of hebephrenia. In fact, J. Rogues de Fursac, one of the French disciples of Kraepelin, has already adopted this term. Instead, therefore, of speaking of the different forms of dementia præcox as hebephrenia, catatonia and dementia paranoides, we would merely speak of the simple form, the catatonic form and the paranoid form. Terminology is often confusing, and whenever possible clearness should be aimed at.

Holding now clearly before our minds these three forms, let us briefly analyze their elements. In reading Hecker's historical paper on hebephrenia, one gleans three essential symptoms; first, an initial period of variable duration during which the patient is in a phase of depression; second, a period during which the depression fades and elements of expansion become manifest; third, and most important of all, a progressive dementia noticeable early and becoming gradually more and more marked; this is a clinical description which I need hardly point out accords closely with our experiences of to-day.

If we subject the symptom group of catatonia to a similar process of analysis, we find that there are present, as in hebephrenia, the same cardinal factors—the initial wave of depression, the subsequent wave of expansion, or mingled expansion and depression, and a progressive dementia, together with definite and characteristic motor symptoms which give to the disease its specific peculiarities and name, i. e., the fixed attitudes, the stereotypy, catatonia, automatism, automatic resistance, etc. When we turn our attention to dementia paranoides, and I now use the term in Kraepelin's original application—as employed in his fifth edition—we come to a group of cases in whom there is as before an initial wave of depression, a subsequent wave of expansion and progressive dementia, but added to which there are not now special motor phenomena, but special psychic phenomena in the shape of delusions, persecutory or expansive, which in their character—though unsystematized—suggest or simulate paranoia.

In studying the group of insanities of adolescence as a whole, certain other facts also become evident; first we learn, as was pointed out several years ago by Pickett, that the various forms tend to occur by preference at certain ages; that is, other things equal, cases of hebephrenia begin at a younger average age than do cases of catatonia; second, cases of catatonia begin at an earlier average age than cases of dementia paranoides, and thirdly, cases of dementia paranoides constitute the oldest group of all. That this generalization is not detailed in its application goes without saying. It is as are other scientific truths, general in its character, but is of the most decided significance. To some extent, the phenomena observed are in keeping with the facts of age, that is, the symptoms largely correspond to the degree of mental development to which the patient has attained at the time of the inception of the disease.

In the early, the hebephrenic or simple form, we have a wave of depression and a wave of exaltation, which is usually of a moderate altitude. It is unusual for the emotional wave to assume the depth or height seen in older cases. Sometimes, indeed, the depression and expansion are so slight that they are described by such terms as "mild depression," "mild hypochondriasis" or are merely characterized by a neurasthenoid group of symptoms. Indeed, the wave of expansion or exaltation may be so mild that its manifestations may be revealed only by physical elation, or boisterous and noisy conduct.

Again in hebephrenia the delusive beliefs are manifold and without attempt at definite arrangement; in other words, there are present the symptoms of moderate initial depression, moderate expansion with a simple dementia. When we turn our attention to catatonia we find that the phases of depression and expansion are somewhat more marked, while the psychic content of the delusions is somewhat higher—less childish or puerile on the whole—than in hebephrenia and a tendency to some arrangement of ideas, however loose, is frequently observed. In dementia paranoides, phases of depression and expansion are likewise marked, though the most prominent features now present are the delusions and hallucinations which both in their content and persistence suggest paranoia.

Let us now consider briefly the position of dementia paranoides. In his fifth edition, Kraepelin, to whom we owe this term, limits it to cases characterized by disconnected persecutory and expansive ideas, which rapidly pass into a persistent terminal confusion or dementia. In his sixth edition he made a decided change: this consisted in including under dementia paranoides the group of cases which he had formerly designated as the "phantastic form" of paranoia. The change was a very radical one, for it disposed at one blow of a large mass of cases universally regarded as belonging to paranoia. It includes almost the totality of the *délires systemtématisés* of French writers—the *delire chronique*

2. Troemner and Ilberg.

of Magnan—and leaves nothing of paranoia proper except the form corresponding to Magnan's "insanity of the degenerates," or Kraepelin's "*combinirte Form.*" In his fifth edition, Kraepelin depicted as phantastic paranoia, the form in which the delusions gradually withdraw themselves from the influence of actual perceptions, and are based more and more on hallucinations and independent invention; the disease presents the usual phases of depression, transformation and expansion. In his seventh edition, Kraepelin adheres to this radical substitution.

I can not but feel that this change has been an unfortunate one, and that by it Kraepelin does violence to facts. It is certainly absurd to speak of a dementia as precocious which may begin as late as 40, 45, 50 or 55 years of age. Equally inapplicable is the term "Jugendirresein." In concluding his very excellent description of this form of paranoia in his fifth edition[3], Kraepelin says that the majority of the cases occur between 25 and 40 years of age; he adds that there are a group of cases which begin at a more advanced age—between the fiftieth and sixty-fifth year. In his description of the phantastic form of paranoia, in the sixth and seventh editions of his work, included now under dementia paranoides, this paragraph as to age is omitted. Why? Are the facts which were true in 1896 no longer true in 1899 or 1904? That they are still true will be admitted by every physician of asylum experience. Do such facts warrant the forcing of this group of cases into the frame of precocious dementia? That this group of cases really belongs under the head of paranoia we believe is established by the following: In the first place, it is impossible to sharply differentiate them from those to which Kraepelin has now limited the term—a group which, as we have already stated, corresponds to that designated at one time by Magnan as the insanity of the degenerate, and which was formerly designated by Kraepelin as the "*combinirte Form.*" The latter constitute a group which is characterized by a very slow evolution of symptoms and by a very prolonged course, but in which the stages of depression, transformation and expansion are alike discernible. The cases are characterized by the fact that their delusions are based more or less largely on misinterpreted perceptions rather than on hallucinations, and that the delusions are perhaps better defined, better systematized and more firmly fixed than in the "phantastic form" or *délire chronique,* and yet these differences are only relative. They are, after all, only variations of degree and not of kind. Even if we take the point in regard to the absence of hallucinations in the "*combinirte Form*" as the standard of differentiation, we find that the moment we analyze it, it breaks down. Not only is it a fact that special sense hallucinations—hallucinations of hearing and of sight—do occur in some cases of this form, but my own observation has convinced me that while special sense hallucinations are relatively uncommon, general coenesthetic and psycho-motor hallucinations are by no means infrequent, and that the latter, as in the other forms of paranoia, form the foundation stone on which is based the mental attitude and the emotional tone of the patient. To define paranoia as a disease of the logical apparatus is a bizarre misstatement, which leaves out the intrinsic and fundamental features of the affection. That there is in all probability an underlying unity in all of the auto-degenerative psychoses which binds together all of the various forms of mental disease beginning with hebephrenia and ending in Magnan's paranoia (insanity of the degenerate, "*combinirte Form*") is very probable. Perhaps there is an underlying unity of cause; indeed, it seems to me that this is probable. The mental picture presented is so varied by the elements of age and other factors that special clinical pictures are inevitable. If a term be devised (dementia præcox being abandoned) which would include all of these progressive degenerative changes under one head it would perhaps be right to consider them together and to treat of them as one disease. In such case, there would not only be included the phantastic paranoia, but the other form of the paranoia as well. I believe, however, that such a generalization as this would be scientifically and practically very disadvantageous, and would be as objectionable as is the present inclusion of the phantastic form of paranoia under dementia præcox.

We have in the solar spectrum seven colors, each color passing by a most gradual transition into another. Shall we, because it is impossible to draw hard and fast lines—because we can not say, for instance, where violet ends and blue begins, say that violet and blue are the same; or that green and yellow—most opposite in their reaction on the human sensorium—are the same because they pass by insensible transition one into the other? Surely nothing can be gained by wiping out well established lines of demarcation. Change does not always mean progress; it sometimes means error. Practical experience teaches us that no sharp differentiation can be drawn between the various forms of dementia præcox—hebephrenia, catatonia and dementia paranoides. Every now and then we meet with cases of hebephrenia in which passing motor phenomena, convulsions, transitory rigidity or stereotypy is noted, or again cases of dementia paranoides in which like features cause an approximation to catatonia. Similarly I believe that it is often difficult, if not impossible, to draw a differentiation between a dementia paranoides and a phantastic paranoia just as it is impossible always to make an absolute differentiation between the latter and the paranoia of Magnan, the "combinirte" form of Kraepelin.

DISCUSSION.

DR. F. W. LANGDON, Cincinnati, said that dementia præcox as a name, apparently, does not apply to a considerable number of these cases. When this condition develops at 30 or 40, or even at 50 years of age, and when it is not terminal dementia nor paretic dementia, nor post-organic dementia, they are classed as dementia præcox. If it can be shown that some of these patients had their original attack at adolescence and that what was looked on as a recovery has really been only a remission, then perhaps they are correctly called dementia præcox. Dr. Langdon considers that this condition is primary degenerative psychosis, which may be arrested for a time at various periods, and which, in most cases, eventually tends toward complete dementia. While no sharp lines of demarcation can be drawn in the psychoses, yet there must be some kind of demarcation for practical purposes, just as in the colors of the spectrum artificial lines must be drawn where the natural do not exist. Dr. Langdon thinks that while the term insanity of adolescence may be applicable to cases of dementia præcox, it does not clear up matters very much, because cases occur at 30, 40, or at 50 years of age, which can not be called insanity of adolescence unless it can be shown that they began at an earlier age. Experience seems to attach a significance to the term dementia præcox, though probably there is no reason why primary or idiopathic dementia would not be just as suitable.

DR. F. X. DERCUM stated that he believes that the older

3. Page 697.

cases should not be classified with the younger ones. He believes that the original designation ought to stand and to stand unmodified; otherwise it loses a great deal of its clinical value. He does not believe that we ought to wipe out distinctions where they exist, just because the cases merge one into the other. The early cases are a distinct group by themselves; they are different from the adult cases of paranoia. It seems to him that it mars the picture, and certainly makes the term meaningless to include the adult cases of paranoia with those of dementia præcox. He thinks that it would be better to classify the juvenile cases under the term insanity of adolescence and leave off the term dementia præcox.

THE NATURE OF TRAUMATIC SCLEROSIS.*

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Though most of the confusion which once surrounded the results of trauma to the nervous system has been dispelled, so that we are able to recognize definitely most of the functional and organic diseases for which trauma is a competent producing cause, the nature of the condition in question is still open to investigation. The questions at issue at the present time seem to be, is this pathologic entity with an organic basis, is it only a grave type of hystero-neurasthenia, is it a distinct functional neurosis, or is it a type of true multiple sclerosis?

The evidence on which rests the claim for an organic basis for this condition dates back to the findings of Westphal, who, in 1878, described disseminated foci of sclerosis in the cerebrospinal axis as a result of trauma. Bramwell also described these lesions as secondary to minute hemorrhages. Sterling Kranthal, Dumenil, Petit and Edges confirmed these findings in their descriptions of degenerations of the columns of the cord, minute hemorrhages into its gray matter, and arterial sclerosis of both spinal and cerebral arteries as a result of trauma.

The evidence furnished by these pathologic findings is further supported by the results furnished by the experiments of Mendal, who fastened dogs to a rapidly revolving table and thus produced adhesions of the cerebral membranes, increase in the glia nuclei, vascular congestion and degenerative cell changes. Fustener, by continuing the experiment for a greater time, was able to produce besides these changes sclerosis of the posterior columns and optic nerves. Schmaus, by diffuse violence applied to the spine, was able to produce degenerations in the spinal neurons and vascular degenerations. His conclusions, as summed up by Knapp, are: that there is a distinct traumatic necrosis of nerve fibers; that more fibers die than can be recognized; that the fibers may be merely fatigued (fatal cases with no lesions and recoverable ones); that this fatigue of fibers may cause their death (gradually produced lesions), and that a gliosis ending in tumor formation may occur.

Since the time of these writers their findings have been so often confirmed that there seems to be no conflict of evidence as to the theory that trauma is a competent producing cause for these findings.

Our present knowledge of the results of diffuse violence to the cerebrospinal axis can be summed up as follows: That said violence can produce a condition known as concussion or commotion; that in this condition there may be localized hemorrhages, laceration or contusion of nerve tissue, multiple minute hemorrhages or thrombi scattered throughout the cerebrospinal axis, general edema, distension and infiltration of the blood vessels; that from these lesions the following secondary changes may occur: The vascular hyperemia and infiltration of the vessel walls not only decreases the amount of nutrient lymph supplied to the nerve tissue, but also interferes with its return by a proliferation of the adventitia and a collection of débris and leucocytes in the perivascular spaces.

This then deprives the nerve cells of nutriment, and at the same time they are poisoned by waste products. Monti's observations show that the nerve cells die in a few hours when their nutrition is entirely cut off, and that defective nutrition causes the same changes after longer periods; the degenerative changes beginning in the distal parts of the cell and finally destroying the nucleus.

The effect of rupture of an axion is to cause swelling of its cell body, an eccentric position of nucleus, a disappearance of the chromaphilic elements, a loss of the striped appearance, and finally disintegration. In embolism and thrombosis the cells in the affected areas become edematous, the chromatin particles collect in the centers and finally disintegration occurs. In all forms of injury to the nerve cells its dendrites are first to degenerate, then its axon, and finally the cell body. The changes shown in the nucleus of these cells are a more deeply staining of the nucleus, which becomes vacuolated and finally small and angular. Coarse, granular changes are said to be characteristic of the chronic forms of degeneration, and depigmentation of sclerotic processes. The changes described in the neuroglia cells consist of swelling, an engorgement with granular detritis, and finally disintegration. The spider cells are said to resist the longest. There seems to be no conflict of evidence as to the theory that a nerve cell which has undergone degeneration is ever replaced, but we seem to have as yet no facts to show how far this process can be developed so as to forbid recovery.

The final results then of commotion or concussion of the cerebrospinal axis, in which the damage has been severe enough to forbid recovery would appear to be the production of areas of degeneration, areas of sclerosis and possibly arteriosclerosis, Bailey and Meyer considering the latter finding to be a coincidence.

Five cases of my own, which illustrate the various stages of the development of these lesions, have come to autopsy.

CASE 1.—This case, showing the primary lesions, was that of a woman, aged 49, seen in the Kings County Hospital. Family and previous personal history, negative.

History.—Two weeks before admission she fell down a flight of stairs, received bruises about the body and limbs, and for a few hours suffered from shock. After one week she became unable to work.

Examination.—Examination showed the patient to be very stout and to lie with the limbs flexed. When made to stand, she slowly sank to the floor. Her speech was indistinct, and she would laugh or cry without obvious cause; memory and volition were poor. There was an intention tremor of the face and limbs, with loss of muscular power. The deep reflexes were exaggerated; anesthesia with ill-defined outline existed below the elbows and knees. The pupils were dilated, but responsive.

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

Course of Disease.—She developed a feeble heart, numerous small bedsores, incontinence of urine and feces, and died at the end of four weeks.

Autopsy.—The brain and cord were found congested and edematous, and the pia cloudy. The vascular walls were thickened by infiltration of leucocytes. Scattered through the brain and in the gray matter of the cord were numerous small hemorrhages, and thrombotic areas of degeneration. In certain areas no nerve cells were to be found, and they were replaced by newly-formed neuroglia tissue. The neuroglia cells were swollen, and the lymph spaces choked with cells and granular matter.

CASE 2.—This case, showing the intermediate stages, was that of a man, aged 40, seen in the Kings County Hospital.

History.—He worked as a laborer, and is said to have been in good health until two months before admission, when he fell down a flight of stairs. He was stunned, bruised about the head and body, and rapidly developed a spastic paraplegia.

Examination and Course of Disease.—Examination showed speech to be slow and indistinct. There was rigid muscular atrophy with flexion of the limbs, and an intention tremor of the face, tongue and hands. There was fibrillary twitching in the calves at times. The deep reflexes in the limbs were increased with absence of the plantar reflex. There were ill-defined anesthetic areas below the middle of the forearms and in the legs. There were several small bedsores and retention of urine. Death occurred after five weeks.

Autopsy.—The autopsy findings were similar to those in the first case, but the hemorrhagic areas were in a more advanced state of degeneration, the sclerotic areas were more fully organized, systemic regeneration was present in the cord, and the arterial walls were much thickened.

The three fully developed cases in which an autopsy was obtained presented the following pathologic findings:

The cerebral cortex was flattened and the pia thickened, opaque and infiltrated with serum, leucocytes and granular matter. The veins were dilated and their walls infiltrated with cells. The arterial walls were much thickened. The cortex was thin and pale on section. The cortical nerve cells were much diminished in number, and as a rule degenerated. In variously sized areas no cells were to be found. The neuroglia was much increased and the lymph spaces were dilated and choked, and scattered throughout the brain; in the cords were small areas of sclerotic tissue. Systemic sclerosis was present in both brain and cord.

ETIOLOGY.

This seems to be all the pathologic evidence which we possess to support the theory of an organic basis for this confidence. The evidence furnished the following facts: True cases of this type are not common, for personally, I have been able to find only fifteen in over three thousand cases which have come under my care where some injury to the nervous system existed for which injury was the cause claimed. Nine of these were males and six females. The age at the time of the receipts of the injury varied from 19 to 50. The assigned causes were in three, severe blows on the head, injury to the head and back from falls in three, general contusions from similar falls in two, and five had been thrown about railroad or trolley cars as the result of collisions. In three cases of head injury and in three of general contusion coma was the immediate result, and in the others shock seemed to have been well marked.

As would be expected from the pathologic findings, the development of the symptoms is insidious and the real nature of the condition is only recognizable after a considerable period of time. In my cases this varied between three and twenty-four months, the average being about eight months. During this period thirteen of my cases gave only a history of hysteria or neurasthenia, and of the remaining, one gave the history of an organic paralysis of the arm and the other of an atrophy of the shoulder girdle.

SYMPTOMS.

The symptoms vary both as to number, relative development, and time of appearance. Headache, varying in character and intensity, was present in eleven. Vertigo, either subjective or objective, was also present in eleven. The mental condition showed defective memory and volition, with easily produced laughter or crying in ten. Insomnia was present in ten. The speech was slow, indistinct or syllabic in ten. Nystagmus was present in ten and in three of these associated with strabismus. The pupils were found to be contracted in three, dilated in three, unequal in three, and irresponsive in two. A coarse intention tremor was present in all and rendered the patient's movements trembling, slow and uncertain. This was associated with some loss of muscular strength. Spastic paraplegia was present in eight. The deep reflexes were found to be exaggerated in eight and diminished in six. Areas of partial anesthesia, involving the extremities, never well defined, were present in ten. The visual fields were contracted in eight, and optic atrophy existed in four. Incontinence and retention of urine was present in nine. Besides these symptoms, which are those usually assigned to this condition, thirteen presented also the symptoms ordinarily found in hysteria, one atrophy of the testes, two auditory hallucinations, two epileptic convulsions, one a cerebral hemiplegia, and one a progressive muscular atrophy.

COURSE OF THE DISEASE.

The course of this condition is slow and progressive, with periods of remission. In my three fatal cases, the duration of the disease varied from six to thirty-nine years. Of the other cases, five have progressed, two have developed epilepsy, two have become insane, and of the remaining, their present condition is unknown.

RESUME OF THE LITERATURE.

It will be seen, then, that my cases present the same clinical picture as those described by Dana, Knapp, and Bailey; and form, at least clinically, a distinct group of cases as the result of trauma, but the real nature of these cases, as shown by recent writers on this subject, is still a question open to discussion.

The evidence furnished us by these authorities may be summed up as follows: Bailey, in his work on Accident and Injury, describes them under the title of the "Unclassified Forms," and states that there is no definite knowledge as to their pathology; that he does not claim a common pathology; that some owe their origin to scattered foci of morbid tissue in the brain and possibly the cord, such as occur in the brain in cerebral enteritis, or in the whole cerebrospinal axis in multiple sclerosis; that it is reasonable to suppose that, in these cases, the injury added to the activity of a process already existing rather than caused a sclerosis in previously healthy vessels; that there can be no doubt that minute multiple lesions can occur in the brain and cord from injury giving evidence of commotion, without indicating any particular part injured; that these disseminated areas of hemorrhage best ex-

plain the tremor, increased reflexes and psychic inhibition and that in many cases hysterical and organic symptoms co-exist.

Dana[1] states that in some rare cases traumatism may produce multiple minute hemorrhages throughout the nervous centers; that there are usually neurasthenic and hysterical symptoms with those of organic disease; that these cases eventually resemble disseminated sclerosis, and, in Hamilton's System of Legal Medicine, he describes them under the title of the "Grave Neuroses," and further states that, in his opinion, all cases of multiple sclerosis are either traumatic neuroses or the result of acute infectious disease, and that it must be the multiple minute hemorrhages which set up foci of softening, which are followed by the formation of connective tissue nodules.

Oppenheim[2] states that shock may be followed by arterial sclerosis, enteritis, and hyaline degeneration.

Knapp[3] describes this condition under the title of "Traumatic Sclerosis;" states that the evidence that these obscure affections are due to structural lesions is very slight, and that cases of disseminated sclerosis may be caused by injury.

Strümpel[4] states that if a disseminated myelitis should actually follow an acute disease and lead to the formation of multiple sclerotic nodules, this would be an affection similar to multiple sclerosis and yet essentially different.

Starr,[5] in writing on multiple sclerosis, states that the recently reported cases of Gaupp and Blencke are undoubtedly traumatic.

CONCLUSIONS.

This brief résumé, then, presents to us all the real evidence which is furnished by the pathologic findings, clinical observation, and the opinions of recent writers on this subject. It now remains for us to consider the facts in evidence and to apply such rules of exactness as our medical science furnishes in determining the nature of the condition in question. The marked part which neurasthenia and hysteria, as has been said, play in this class of cases, as they do in many other forms of organic nervous disease and especially those cases which follow trauma, has undoubtedly caused some to classify this condition as a type of these neuroses, but when we take into consideration the nature of the real symptoms, such as the syllabic speech, true nystagmus, the papillary reactions and optic atrophy, the character of the tremor, the character of the reflexes, the true ataxia, the character of the anesthesia, the vesicle paralysis, the bed sores, the fatal course of the disease, and the pathologic findings, it can not be disputed that we are dealing with an organic disease of the nervous system rather than with a neurosis.

The consideration of the nature of this condition has been complicated by the occurrence of a class of cases, first described by Westphal and later by Strümpell, under the name of pseudo-sclerosis. This condition is said to closely resemble multiple sclerosis, to run a long and fatal course, and for which no pathologic basis can be demonstrated. This condition, it is said by Strümpell, can be distinguished from multiple sclerosis by its very marked oscillatory tremor, by the absence of real ataxia, and by its mental condition, in which there are causeless outbursts of wrath and actual maniacal attacks. Personally, I have seen but one such case, but these clinical differences and absence of pathologic findings sharply distinguish it from the condition under consideration. It would appear, then, that beyond a reasonable certainty, this condition in question is one of organic disease of the central nervous system, and that the sole question left at issue is: Is it a form of multiple sclerosis or a distinct pathologic entity?

Taking the pathologic description given by Starr[5] of multiple sclerosis as a standard, it appears that the condition now under consideration differs from that disease in certain pathologic findings. This writer states that multiple sclerosis is never limited to definite tracts; that it does not lead to secondary degenerations in the various tracts because it spares the axons; that the patches consist of neuroglia fibers and glia cells, and that the essential factor is the production of neuroglia fibers and the disappearance of the myelin sheaths of the nerve fiber. It is in evidence, then, from the facts furnished by the pathologic findings in the class of cases in question, that these cases differ from true multiple sclerosis in the fact that secondary and systematic degenerations do occur; that the axons are destroyed, and that the patches of morbid tissue consist more of fibrous and less of cellular tissue than those found in true multiple sclerosis. This supports the theory of Strümpell, that this condition is similar to and yet essentially different from true multiple sclerosis.

The contention of Bailey and Meyer, that the diseased condition found in the arteries is due to an accidental predisposition and is not one of the essential pathologic processes belonging to the disease, seems to be contradicted by the facts in evidence, for, as it has been shown, this arteriosclerosis is a constant occurrence which is improbable were it only an interposed condition; that vaso-motor paresis with dilatation is one of the natural results of cerebral commotion[6], and that this dilatation may be followed by infiltration and thickening of the vascular walls. It appears, then, from the facts in evidence as furnished by pathologic and clinical observation and from the opinions of recent writers on this subject, that traumatic sclerosis is an organic disease of the cerebrospinal axis; that trauma is a competent producing cause, and that it is not a type of multiple sclerosis but a distinct pathologic entity.

29 South Portland Avenue.

DISCUSSION.

DR. EDWARD B. ANGELL, Rochester, N. Y., said that pathologic conclusions from these cases are unusual because few cases reach autopsy. The period of time during which the degenerative changes occur sometimes lasts so long that the patient passes from under observation. In a certain limited number of cases of trauma there are organic changes in the cerebrospinal axis, but there are a large number in which there are no such changes. Dr. Angell believes that a great deal of confusion has been brought about by trying to establish a new symptom-complex in traumatic diseases of the nervous system. The term "railway spine," as used by Ericson, expresses injuries of the spine due to trauma and is a very misleading term. Dr. Brush's work will help to clear up a great deal of misunderstanding. A man recently came to Dr. Angell's office who had been injured in a railroad wreck. He was thrown from the train, striking on his back in an adjoining canal, and

1. Dana: Text-book of Nervous Diseases.
2. Oppenheim: Diseases of the Nervous System.
3. Knapp: Text-book of Nervous Diseases by American Authors.
4. Strumpell: Text-book of Medicine.
5. Starr: Organic Diseases of the Nervous System.
6. Phelps: Traumatic Injuries of the Brain.

apparently suffered no injury, being a strong, healthy, robust man. Six months after the accident he noticed a disturbance of the muscular system and at the present time there is a well-developed case of muscular dystocia. In this case the symptoms did not follow the usual course. Undoubtedly, primarily, the organic changes are very minute, but the secondary degenerative changes are sometimes very extensive and not usually accompanied with definite symptoms until some time after the date of the injury. In Dr. Angell's experience in medicolegal matters he has found that many clinicians and neurologists are misled by the appearance of the patient who receives the injury and by the various symptoms of which he complains. The cases should be studied carefully, irrespective of this specific injury, and in this way the truth will be arrived at. In another case, illustrative of the other type, a man received an injury in a railway collision by being thrown down an embankment. There was marked evidence of hysteria and some suggestions of organic trouble. After the settlement of the suit, in which he got about $10,000 or $12,000 in damages, he rapidly recovered. Two years after the trial he was practically a well man and nearly all these pathologic symptoms had disappeared. Dr. Angell believes that the subsequent organic changes depend very largely on the previous health of the neuron receiving the injury. Not all people have a nervous system that is equal in longevity to their arterial system and in minor accidents at times there may be degenerative changes in the nervous system which are not wholly due to the injury.

PREVALENCE AND PROPHYLAXIS OF PNEUMONIA.*

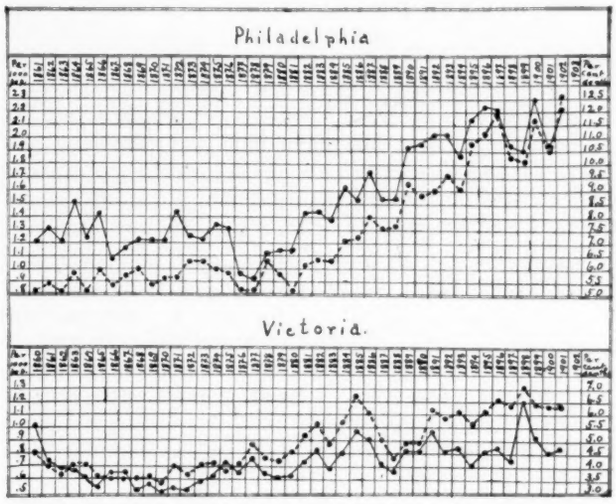
EDWARD F. WELLS, M.D.,
CHICAGO.

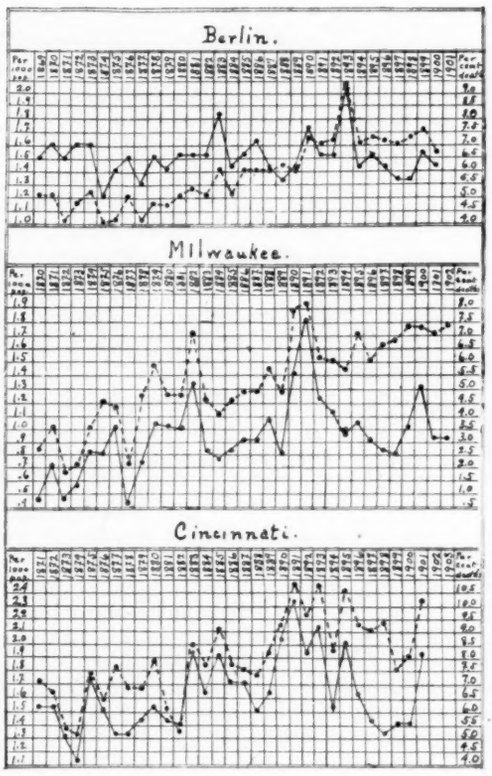
Two years ago I presented to this Section a paper on the fatality and increasing prevalence of pneumonia, with suggestions for individual and communal prophylaxis, and this communication should be considered as being supplemental to that paper.

When we subtract from our mortality bills the deaths caused by infectious diseases, e. g., tuberculosis, malaria, typhoid fever, dysentery, diphtheria, scarlatina, plague, etc., it will be found that comparatively few remain. Such infectious diseases are all essentially preventable, and might well be theoretically wiped off the face of the earth. In the case of some of these this will surely come to pass within a measureable time, but in the case of others this happy period is yet in the indefinitely far-distant future. In the case of some of the great infections, notably tuberculosis, malaria and typhoid fever, the causes, modes of conveyance and methods of prevention are so well known and available that we can contemplate their future with considerable complacency.

Pneumonia is the one great infection in which no systematic and strenuous efforts have, as yet, been made toward prevention. Clearly this has been due to our ignorance of the manner in which the pneumococcus acts as an efficient cause of pneumonia; of avenues of infection and manner of germ diffusion; of efficient and available methods of prevention. The time is now at hand, however, when, with a wider and more exact knowledge of fundamental facts, we are probably in a position to inaugurate a great forward movement in the prophylaxis of pneumonia. In my opinion, we can formulate rules for prevention which will appeal to the reasoning mind of the practitioner of medicine and to the common sense of the layman and which are sufficiently available to meet the exigencies of every-day life. Certainly the conditions are such as to invite a very careful consideration of the subject from every point of view.

Pneumonia is a very prevalent disease and its prevalence is markedly increasing. This increase applies to the deaths per 1,000 of population and to the percentage of total deaths. It probably also applies to the morbidity of the disease, but we lack statistics to positively prove the assertion. The increasing mortality prevalence of pneumonia is graphically shown by the above curves. In these curves the solid line indicates deaths per 1,000 of population. the dotted line per cent. of total deaths.





To what influences may this increased prevalence of pneumonia be attributed? That it is due to any general deterioration of the resisting powers of the populace to morbid infections is disproved by the fact that the av-

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

erage duration of life has been distinctly lengthened during the period of years covered by our inquiry. It is likewise improbable that there has been any general increased vulnerability to this particular bacterial infection. We are, therefore, driven to the conclusion that the pneumococcus has become more prevalent, probably more virulent, or that our opportunities for encountering the germ have been multiplied, or, more likely, that each of these is operative in bringing about the results mentioned. With the pneumococcus as a common parasite in the upper respiratory passages of man, and with pneumococcus-laden secretions from these parts extruded in such manner that they find entrance, as spray or dust, into the respiratory passages of other and unaffected persons, the very general absolute and proportional increase of urban populations and the augmented facilities for travel and the universal tendency for people everywhere to congregate and mingle together, is amply sufficient to account for much, if not the whole, of the increased prevalence of pneumonia.

During several months I have carefully examined the secretions from the respiratory passages, oftenest from the throat, in 135 persons, and found the pneumococcus present in 61, or 45 per cent. This proportion, it will be noted, is very much greater than that usually found by other observers. In this connection it may be stated that in a considerable number of cases repeated examinations were made, and that in the majority both smears and cultures were examined. The specimens were stained by the Gram method, using a freshly made gentian violet solution and counter staining with pyronin. In the instances in which both smears and cultures were made the pneumococcus was found most readily and oftenest in the smears. The preparations were subjected to careful and prolonged examination, the pneumococcus being the object sought for it was probably found oftener than it would have been were it noted only incidentally. In the majority of the cases the number of pneumococci found were either few or moderate. In some instances the pneumococci were numerous and in a few they were very numerous. In one case, a man who had had pneumonia six years before, and now ill with severe tonsillitis, the germ was present in extraordinary abundance.

At my request Dr. Reynolds, commissioner of health for Chicago, had a special report made on this subject by the director of the municipal laboratory, which is herewith appended:

CHICAGO, May 26, 1904.

Arthur R. Reynolds, M.D., Commissioner of Health.

DEAR SIR:—In reply to your note of yesterday regarding the number of times pneumococci were found in the laboratory specimens, I beg to say that during the month of April ninety-six throat cultures were examined in the laboratory, and pneumococci were found in large numbers in six of these cultures. This would be a little over 6 per cent. I think, however, that if we made a special stain each time we would find a few pneumococci present in a greater percentage of the cases.

I had hoped to make a special stain of each culture in order to give Dr. E. F. Wells, 4744 Woodlawn avenue, a complete report as to the number of times pneumococci are found, whether they be the predominating organism or not. However, the moderating weather that we have had lately has produced a marked decrease in both pneumococci and influenza bacilli, so that 6 per cent of the cultures is about the average for the present. Very truly yours,

J. F. BIEHN, M.D., Director of the Laboratory.

In making these observations there was early noted a peculiar and, I believe, important fact, namely, that in some families every, or nearly every, member had the pneumococcus in the throat, while in some other families no member showed the organism. Comparing these various observations, it was further noted that the majority of the families in which the pneumococcus was peculiarly prevalent had had, more or less recently, one or more cases of pneumonia, while the families in which the germ was not found were, as a rule, without such history. For example:

CASE 1.—In 1899 a man, aged 57, had pneumonia. His sputum, examined several times and as recently as last November, always showed pneumococci. He died in December from valvular disease of the heart. On December 10 smears were made from the throat secretions in the case of the widow and also a servant who had been in the family for many years, and in both a few pneumococci were found. They were both suffering from influenza at the time.

CASE 2. A man, aged 40, had pneumonia in 1898. In April, 1904, he had a very severe attack of tonsillitis, with the pneumococci as the pathogenic germ present in immense numbers. A few days later smears and cultures were made from the throats of the three other members of the family, and pneumococci were found in each.

CASE 3. A man, aged 57, had pneumonia in April, 1904. Of three other members of the family two had pneumococci in their throats. Two other persons who had been in the same house for several weeks did not show the organism.

CASE 4. In February, 1904, a man died of pneumonia. A few weeks later examination showed pneumococci in the throats of his widow and a servant who had long been in the house.

CASE 5. Two years ago a child had two attacks of pneumonia within a year. The throats of four other members of the family contained pneumococci, while they were absent in the case of the servant who had been long in the house.

CASE 6. Four years ago a man, aged 66, had pneumonia. One year ago his wife died with the same disease. Pneumococci are present in the throats of the gentleman and also in another member of the family. Two other persons who have recently become members of the family appear to be free from the organism.

There are exceptions, some of them marked, to the rule:

In one family a boy had pneumonia with middle-ear and mastoid suppuration three years ago. Of the three other members of the family all appear to be free from the pneumococcus. In another family a child had pneumonia three years ago. Of the four other members of the family two have and two have not the germ in their throats. In yet another family the mother has recently had pneumonia, while the pneumococcus has been found in the throat of only one of the other seven members. In yet another family the pneumococcus was found in the throats of each of the four members, although no case of pneumonia has ever occurred in that family.

It would seem that this fact, if confirmed by further observation, offers a plausible explanation for the house epidemics and consecutive family cases which are sometimes encountered.

At the present moment, with an increasing prevalence and case mortality and an unsatisfactory therapeusis, the hope for the immediate future in pneumonia lies in the line of prevention. What can we do to prevent this disease? I answer as follows:

1. For the Individual:—The nasal, pharyngeal and oral cavities should be kept as clean as possible and especially free from accumulations of mucus. When it has been demonstrated that such secretions contain the pneumococcus these efforts should be particularly well directed and maintained. In coughing and sneezing a protective cloth, preferably moistened, should be held

before the mouth and nose. This is especially necessary in the case of pneumonic patients and in those harboring the pneumococcus. The sputum and other secretions of the respiratory tract of such persons should be destroyed before they have become dried. Individuals should, so far as practicable, keep out of range of the extruded pneumococcus-laden secretions of infected persons.

2. For the Public:—The above advice, properly formulated into plainly and succinctly stated rules, should be widely and persistently circulated by the communal health authorities among the laity, and practicing physicians should be furnished a supply of these rules, neatly printed and without imprint, with the request that they give it as their instructions to their patients and clientele. And further, by every means, the interest of physicians and humanitarians in this subject should be aroused and fostered. For this purpose special societies and committees might be formed for the purpose of studying the problem and furthering the efforts of the various health bodies, as has so successfully been done in the case of tuberculosis.

DISCUSSION.

SURGEON-GENERAL STERNBERG, Washington, D. C., stated that he made a good many experiments as long ago as the winter of 1880, when he first discovered this micrococcus of pneumonia, and he found that it was very pathogenic for rabbits. He went to Philadelphia during that winter for the special purpose of finding out whether this micro-organism was to be found in the mouths of other healthy individuals or whether it was peculiar to himself. He made numerous experiments with the saliva of students in Philadelphia and in Baltimore. The organism was found in a considerable proportion of the cases examined, and there seemed to be quite a difference regarding its virulence as obtained from different individuals. Subsequent observations made in Germany and in this country have shown that it is a widely distributed organism quite as common as the streptococcus pyogenes and other pyogenic micrococci. All these pathogenic bacteria lose their virulence when they lead a saprophytic life for some time. As the pneumococcus is found in the mouths of healthy individuals it must be considered a saprophyte. The pneumococcus found in the sputum of pneumonia patients, as a rule, is more virulent than when found in the mouths of persons who have not suffered from pneumonia. Dr. Sternberg is a little in doubt as to the ability of bacteriologists to say positively that they find the micrococcus of pneumonia in smear preparations. There are other organisms which resemble it so closely morphologically that he could hardly say that he had it unless he had found it in cultures or had obtained it from inoculations of susceptible animals. Referring to the danger of persons carrying this micrococcus in the salivary secretions, Dr. Sternberg stated that he had made frequent inoculations in rabbits with fatal results, showing that he carried this micro-organism in a virulent form in his salivary secretions. It is evident that something more than the micrococcus is necessary in order to induce the disease—a lowered vitality from insufficient nutrition, loss of blood, overwork, alcoholism, insanitary surroundings, etc. Dr. Sternberg considers that the prevention of pneumonia by disinfection is a difficult thing to carry out on a large scale when it is considered how widely the pneumococcus is distributed. Prophylaxis must depend largely on combating those causes which make the individual susceptible and Dr. Sternberg considered that the micrococci in the sputum of pneumonia patients should always be destroyed, but he doubts whether it is practical to destroy the micrococcus in the mouths of healthy individuals, or of those convalescent from pneumonia as a general measure of prophylaxis.

DR. GEORGE M. KOBER, Washington, D. C., said that he thinks that sufficient importance has not been given to the predisposing causes of pneumonia. The exciting causes have been pointed out by the preceding speakers. The increased consumption of alcohol in the United States is one of the most important predisposing factors. Students of the United States census statistics will observe that while the general death rate has decreased there has been a positive increase in all diseases that are believed to be caused, or at least influenced, by the habitual and undue consumption of alcohol. It is also a fact that the national drink bill has increased from year to year, and that the amount of liquor consumed per capita is simply enormous. Dr. Kober thinks that there are statistics indicating that the consumption has increased, so that the amount now consumed is about eighteen gallons per year per capita in the United States. At all events the general statistics clearly point to an increased consumption of alcohol, and he believes that it is not only a question of alcohol, but a question of the purity of the alcohol. The heavier alcohols are toxic and affect the tissues of the body, lowering the vitality to a great extent, first destroying the moral, intellectual and physical sensibilities. One of the most common effects is, perhaps, an impure blood supply and degenerative changes, because alcohol, apart from increasing connective tissue, favors the conversion of albuminoid tissues into fats, and, therefore, there is an increase of chronic affections of the kidneys, cirrhosis, hepatic diseases, heart disease and all other diseases caused by alcoholism. The vital statistics of 1900 give an increased death rate from these diseases, and Dr. Kober believes that the secret, after all, lies in the increased consumption of alcohol in the United States, and possibly in a general tendency to adulteration of liquors. While Washington is exempt from an increase of pneumonia, it is, perhaps, due to the fact that it has a large negro population, and there seems to be among them a racial distaste for alcoholic liquors; at all events, the negro is not a drunkard. The ratio of diseases believed to be caused by alcohol among the negro in Washington is infinitely less than among the whites, and yet in all other diseases the death rate among the negroes is very much higher than among the whites. They seldom have a death from cirrhosis or from arteriosclerosis. Indeed, all of those diseases that are influenced by alcohol are scarce among the negroes, and yet their general death rate is far in excess in all other diseases.

DR. JOHN S. FULTON, Baltimore, said that if it is true that pneumonia has increased, which he is inclined to doubt, it would be very interesting to discover the cause, and it is necessary to learn first what parts of the population have suffered the increased mortality; for the mortality has not been equally distributed either according to age or locality. The particular point of interest to him at the present time concerns the exceptions, and especially the one to which Dr. Kober has alluded, the District of Columbia. Dr. Fulton believes that the residents of the District of Columbia have overlooked one fact which may explain their exemption from an apparent rise of pneumonia rather better than to attribute it to the non-use of alcohol by the negroes. Very likely the increasing use of alcohol is in part responsible for the fact that pneumonia is not diminishing as rapidly as it should at some periods of life, if it be true that the per capita consumption of alcoholic beverages is increasing. He has no doubt that between the ages of 15 and 60 the mortality in pneumonia has been decreasing, and here, if anywhere, the influence of alcohol should appear. The age distribution in the District of Columbia, to his mind, explains the apparent exemption of the district from the increased death rate of pneumonia. He is not sure that there has not been a rise in the District of Columbia in the mortality from pneumonia at certain periods of life. The population in the district lacks those elements of population which contribute to the increase of pneumonia. There are fewer people in Washington under the age of 15 years than in any other part of the United States save only the very newest settlements. Above the age of 60, also, Washington has a relatively small population, while between the ages of 15 and 60 the population is proportionately large. Political conditions dominate the age distribution of the population of the District. It has not and never will have an age distribution comparable with any other urban population. Washing-

ton will always have a relatively excessive population in the active period of life. It has also a very considerable excess of females between 20 and 40. Pneumonia at the most important period of life appears to be diminishing, and Washington has precisely the elements of population which enable her to profit by this decline. If the mortality of the District could be equated so as to be comparable with that of such cities as New York, Chicago, Richmond and Baltimore, the true state of affairs would not be found just such as the raw figures indicate. It might appear that Washington has had an increased mortality from pneumonia at a certain period of life, namely, below the age of 5. If pneumonia has really increased, Dr. Fulton's opinion is that the increase has fallen on very early life.

DR. E. F. WELLS said that in presenting this paper he intentionally allowed every mooted question, as he thought, to remain out of the paper. The basis of the belief, for example, that the pneumococcus is the cause of pneumonia, the bearing which different strains of pneumonia have on the characteristics of the disease, the possibility of infinitely increasing or decreasing the virulency of each of these individual strains, the connection between the organism which Surgeon-General Sternberg found in his own mouth, and in the mouths of others, and that of the organism found in pneumonia, and the evidence on which we believe one to be the same as the other, he entirely omitted, and intentionally, because he did not wish to take up time. He desired to present as clearly as possible certain facts which he believes have a bearing on the propagation and increasing prevalence of pneumonia, and to offer some suggestions by which it might probably be diminished. In another section he presented some facts along these lines, which, however, are well known, that not only are the pneumococcus and other pathogenic organisms distributed by means of the sputum from the throat and nose of men and women, but in a more insidious manner, by coughing and sneezing, and throwing a minute number of particles into the air, with a possible and probable bearing on the dissemination of this organism and the increasing prevalence of pneumonia. Dr. Wells said that he feels fairly sure of the ground on which he stands, and will continue his efforts to find a public ready for reasonable and available methods for the prophylaxis of pneumonia.

THE RELATION OF THE INTERNAL SECRETIONS TO EPILEPSY, PUERPERAL ECLAMPSIA AND KINDRED DISORDERS.*

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PHILADELPHIA.

A suggestive coincidence bearing directly on the disorders referred to in this paper, epilepsy, puerperal septicemia, tetanus and hydrophobia, is that several investigators have been led to conclude by experiments, in which each organ was studied individually, that the adrenals, the pituitary body and thyroid not only influence metabolism, but that they are also concerned with the destruction of toxic waste-products. Thus, in 1891, Abelous and Langlois[1] advanced the view that the function of the adrenals was to "neutralize or destroy toxic substances produced or elaborated during chemical interchanges, and particularly those resulting from muscular work." In 1894 Lloyd Andriezen[2] concluded that "the pituitary gland exercises a trophic action on the nerve tissues, which, in more definite terms, means enabling them, *a*, to take up and assimilate oxygen from the blood stream, and, *b*, to destroy and render innocuous the waste-products of metabolism." As to the thyroid, it may be said to have been connected with both these processes almost since any function was ascribed to this gland. "According to one hypothesis," says Howell,[3] "the function of the secretion is antitoxic. In some way it antagonizes toxic substances supposed to be formed in the body in the course of normal metabolism."

The interpretation of the functions of these three organs which I submitted last year,[4] merges all these hypotheses into a coherent whole; it explains, also, the manner in which metabolism is sustained by all three organs simultaneously, and how the toxic waste products are destroyed. When we consider the vast array of facts on record attesting to a close relationship between these toxic wastes and the diseases in question, it can not but appear that the interpretation referred to may serve to throw some light on the pathogenesis of these diseases, and, perhaps, open new lines of thought in the direction of their treatment.

Since my views were published considerable personal work and new facts contributed by experimenters have only served to strengthen the position then taken as to the functional relationship between the adrenals, the pituitary body and the thyroid. To illustrate the connection between the interial secretions and the diseases mentioned, it is necessary to briefly review the evidence attesting the existence of what I have termed the "adrenal system" as it appears enriched by these new facts.

The marked blood pressure raising power of adrenal extractives and their action on the heart are well known. That the secretion of the adrenals produces identical effects has been established experimentally.

Gottschau,[5] Stilling,[6] Manasse[7] and Auld[8] observed that hyaline masses were secreted by rows of cells in the medullary canal of the organ, and that pressure on the latter caused these masses to pass into the blood vessels. Pfaundler[9] discovered similar masses in the latter and in the suprarenal vein where it opens into the vena cava. Cybulski, Szymonowicz[10] and Langlois[11] then ascertained that blood drawn from the suprarenal veins produced effects similar to those that follow injections of adrenal extracts, and Biedl[12] found that, while blood taken from other veins produced no effect when injected intravenously, blood taken from the adrenal veins used in the same way produced the characteristic effects of adrenal extracts, i. e., slowing of the pulse followed by a rise of blood pressure.

How is the functional activity of the adrenals increased? To ascertain the identity of their secretory nerves, Biedl tied the vena cava below the adrenal veins, inserted a small canula above the latter, and registered the number of drops of blood that escaped from it. On

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* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Abelous and Langlois: Arch. de Physiol. norm. et Path., 1891.
2. Andriezen: Brit. Med. Jour., Jan. 13, 1894.
3. Howell: Trans. Cong. Amer. Phys. and Surgs., vol. iv, p. 70, 1897.
4. Sajous: Internal Secretions and the Principles of Medicine, vol. i, Philadelphia, 1903.
5. Gottschau: Archiv f. Anatomie u. Physiol., 1883.
6. Stilling: Archiv f. path. Anat., vol. cix, p. 324, 1887.
7. Manasse: Virchow's Archiv f. Path. u. Physiol., vol. cxxxv, p. 263, 1894.
8. Auld: Brit. Med. Jour., May 4, 1894.
9. Pfaundler: Sitzung.-Ber. d. k. Akad. d. Wissensch.-mathem., vol. cl, p. 3, 1892.
10. Cybulski and Szymonowicz: Gazeta Lekarska, March 25, 1895, and Archiv f. die gesammte Physiol., vol. lxiv, Nos. 3 and 4, p. 97, 1896.
11. Langlois: Revue Scientifique, p. 303, 1897.
12. Biedl: Archiv f. d. gesammte Physiol., vol. lxvii, Nos. 9 and 10, p. 443, 1897.

dividing the splanchnic and stimulating its peripheral end, the number of drops increased, but only after from seven to ten seconds, then gradually to from three to five times the normal number. The increased flow continued from ten to twenty seconds after stimulation had ceased. Stimulation produced no effect when the suprarenal nerves were cut. This showed that the splanchnic contained nerves which increased the blood flow through the adrenals—as does the chorda tympani in the submaxillary gland—but did not disclose the identity of the secretory nerves. This was accomplished by Dreyer[13] of Johns Hopkins. He ligated the adrenal vein so as to secure, through a canula, only blood derived from the gland. In eight experiments a given bulk of adrenal blood taken during stimulation of the splanchnic produced decidedly greater effect than the same blood before stimulation. The greater splanchnic was thus shown to contain fibers which, on excitation, increase the functional activity of the adrenals.

Biedl also tried to prove experimentally the presence of vasoconstrictor nerves in the adrenals. Stimulation of the (cut) splanchnic, vagus and of the suprarenal nerves failed to show the least constriction; asphyxia, which causes marked vasoconstriction in the intestines, also failed to cause it in the adrenals. He then exposed and divided all the spinal roots from the third thoracic to the third lumbar, and stimulated both their anterior and posterior segments "with a strong induction current." No vasoconstriction occurred in the adrenals, though the usual effects were noted elsewhere, and the rapidity of the blood flow from the adrenal veins was never increased.

This experiment was repeated three times, and always gave similar results. It shows not only that the adrenals are not supplied with vasomotor nerves, but also that the secretory nerves to the adrenals do not originate in the spinal cord up to the third thoracic.

Again, if the adrenals' secretory fibers are present in the greater splanchnic, which arises from the sixth ganglion of the sympathetic cord, some splanchnic fibers —those to the adrenals—must ascend in the sympathetic cord at least to the level of the second thoracic. Quain[14] states that some fibers of the splanchnic's higher roots "may be traced upward in the sympathetic cord as far as the first or second thoracic ganglia." Gray[15] gives the same limits; Curveilhier[16] says that these upper filaments "are merely in contact with the sympathetic," a statement which obviously suggests that they constitute an autonomous path.

Stimulation of the sympathetic cord alone above the origin of the splanchnic nerve, i. e., up to the first thoracic ganglion, increases the functional activity of the adrenals.

We have seen that when Biedl stimulated the splanchnic the functional activity of the adrenals increased only after from seven to ten seconds had elapsed, and that it continued from ten to twenty seconds after the excitation ceased. The intestines react in a similar way. If "a galvanic current be passed through the splanchnic nerve," says Brubaker,[17] "no instantaneous effect is noticed, as in the case of the cerebrospinal nerves, but in the course of a few seconds a slow, progressive contraction of the muscular coat of the intestine is established, which continues some time after the irritation is removed." If this is due to hypersecretion of the adrenals, the intestines are thus subjected to two experimental vasoconstricting influences: the adrenal secretion and their own vasoconstrictor nerves. Intestinal "inhibition" affords evidence of this dual action. Schiff, Ludwig and Kupffner, Bechterew and Mislawsky[18] have observed both a motor effect, i. e., increased peristalsis sometimes, and inhibition at others. Bunch[19] has given graphic records of intestinal movements in which stimulation of the splanchnics caused in some animals augmentation, in others inhibition of the intestinal tone." Starling[20] says in this connection that Jacobi[21] found that "section of the nerves running from the suprarenals to the solar plexus annuls the inhibitory action of the splanchnics (on the intestines) without affecting their vasoconstrictor effects." This plainly shows that when the adrenals are no longer stimulated through section of their secretory nerves the constrictor (experimental) effects caused by the vasomotor nerves continue alone.

The same dual action occurs in all other organs supplied with vasomotor nerves. In the liver, for instance, two forms of experimental vasoconstriction are discernible; one due to the true vasoconstrictors, which nerves, as shown by François-Franck and Hallion[22] and confirmed by others, leave the spinal cord from the sixth thoracic to the second lumbar, inclusive; the other due to stimulation of the sympathetic cord above the sixth thoracic. The above-named physiologists found that stimulation of the sympathetic chain where, they state, "it has not as yet received from the spinal cord the first hepatic vasoconstrictor rami," caused "a marked rise of aortic pressure." They then divided the rami containing all the hepatic vasomotor nerves, thus isolating the sympathetic chain, and stimulated the latter above the origin of the upper root of the splanchnic. This provoked, as stated by them, and as shown by their tracings, "the maximum vasomotor effect," while division of their upper root was followed by "marked reduction of the vasoconstrictor effect." The upper root referred to, however, being the identical one which, we have seen, anatomists trace up to the first thoracic ganglion, similar effects should be obtained higher up in the sympathetic chain.

Referring to experiments recorded by Pavy, Cyon and Aladoff, and François-Franck, some twenty years before, François-Franck and Hallion remark that they had "led to the supposition that the hepatic vasomotor nerves passed down to the loop of Vieussens by the cervical sympathetic cord, and thence to the thoracic chain through the stellate inferior cervical ganglion." Unable, of course, to account for their results, they ascribed them to "reflex action" or to some unexplained "indirect influence."

Still, the loop of Vieussens, to which these physiologists refer, forms part of the cervical sympathetic, and lies above, therefore, the upper limit of the splanchnic

13. Dreyer: American Journal of Physiology, vol. II, p. 203, 1899.
14. Quain: Anatomy, 7th ed., vol. II.
15. Gray: Anatomy, Philadelphia and New York, 1901.
16. Cruveilhier: Anatomy, American ed., New York, 1844.
17. Brubaker: Compend of Physiology, Philadelphia, 1900.
18. Schiff, Ludwig and Kupffner, Bechterew and Mislawsky: quoted by L. H. Starling in article on "Mechanism of the Digestive Tract," in Schäfer's Text-book of Physiology, vol. II, p. 313, Edinburgh, London, New York, 1900.
19. Bunch: Quoted in E. H. Starling's article on "Mechanism of the Digestive Tract," in Schäfer's Text-book of Physiology, vol. II, p. 313, Edinburgh, London, New York, 1900.
20. Starling: "Mechanism of the Digestive Tract," Schäfer's Text-book of Physiology, vol. II, p. 313, Edinburgh, London, New York, 1900.
21. Jacobi: Archiv f. exper. Path. u. Pharm., vol. xxix, p. 171, 1892.
22. François-Franck and Hallion: Arch. de Physiol. norm. et Path., vol. viii, No. 5, p. 923, 1896.

fibers, the first thoracic. How account for the effects noted?

In 1859 Pavy[23] found that "division, on both sides of the neck, of the ascending branches of the superior thoracic ganglion" in the vertebral canal caused "an intensely marked diabetes." Francois-Franck and Hallion refer to these branches collectively as the vertebral nerve, composed of the rami of the sixth, seventh and eighth spinal nerves, and the one which on stimulation caused hepatic vasoconstriction. Glycosuria is now generally attributed to a too rapid conversion of the liver glycogen into sugar, i. e., to excessive functional activity. Even Bernard's puncture is ascribed to localized irritation.

This interpretation is sustained by the fact that adrenal extract, as shown by Blum,[24] Croftan[25] and others, cause glycosuria. Herter,[26] for example, found that intravenous injections of adrenalin were followed by a large excretion of sugar, and states in this connection that "a rise of blood pressure is an accompaniment of glycosuria." Stimulation of the adrenals can alone, therefore, bring about glycosuria and its corollary a rise of blood pressure. Moreover, Claude Bernard found that experimental diabetes was prevented by division of the splanchnic. It follows, therefore, that division of the vertebral nerve should prevent diabetes if it were the secretory nerve of the adrenals. Indeed, the vertebral nerve is what Pavy termed it from the start, namely, a sympathetic nerve—an important one, as we will see, since it terminates in the organ from which the nerve to the adrenals originates.

Cyon and Aladoff[27] found that lesions or removal of the upper thoracic or inferior cervical ganglia, or division of the loop of Vieussens, also caused diabetes. All these contain, as is well known, sympathetic fibers which ascend to the superior cervical ganglion. Again, Pavy states that "of all the operations on the sympathetic of the dog that have as yet been performed, removal of the superior cervical ganglion the most rapidly and strongly produces diabetes." Hence, some of the ascending fibers referred to must transmit their vasomotor impulses to some cranial organ which, when passively congested and overactive through section of these fibers, can in turn stimulate the bulbar centers and produce glycosuria. That we are dealing with a vasomotor path is further emphasized by the "temporary nature" of the diabetes witnessed by Pavy.

Which is the cerebral organ thus influenced? Langley[28] refers to three bundles of fibers given off by the superior cervical ganglion, the distribution of which is uncertain. Two of these pass toward the eye muscles; of the third he says: "there is that which accompanies the internal carotid; it would naturally be supposed to convey vasomotor fibers to the vessels of the brain, but this view, as we have said, is contested." The carotid plexus is connected with the pituitary body. So distinct is this connection, and so direct is the anatomic relationship between this organ and the sympathetic chain, that Bourquery, a French anatomist, looked on it some forty years ago as the general center of the sympathetic system. Hirschfeld[29] says in this connection: "I am all the more inclined to adopt this view, since I have always seen in my dissections a great number of nerve fibers extend from the superior cervical ganglia to this organ." Among the anatomists who have also found these fibers are Pourfour du Petit, Fontana, Bok, Sappey, Hirzel, Warrentropp and Bazin, and among the more modern works which refer to them are those of Testut,[30] Morris[31] and Gerrish.[32] On the other hand, Berkley,[33] after an exhaustive histologic study of the nervous supply of the pituitary body, says, referring to its anterior lobe: "All nerves belonging to it appear to be derived from branches of the carotid sympathetic plexus."

To control this evidence, it should be possible to show that overactivity of the pituitary body, hyperemia of the bulbar center caused by Bernard's puncture and injections of adrenal extractives can cause diabetes. We have seen that Bernard prevented experimental glycosuria by dividing the splanchnics; Loeb[34] states that glycosuria does not occur during the post-operative life of animals deprived of the pituitary, and that it is a frequent symptom of pituitary growths. Again, Berkley, as stated, traced the fibers of the carotid plexus to the anterior lobe. Sternberg[35] found that this lobe was chiefly involved in acromegaly. Tamburini,[36] in a study of acromegaly which included twenty-four autopsies, lays stress on the fact that exaggeration of the functions of the pituitary attends the first stage. The excessive and often ravenous appetite, the thirst, polyuria, the full and hard pulse, cutaneous hyperesthesia, abnormal superficial heat, etc., and the typical muscular and osseous hypernutrition, all indicate excessive functional activity—the underlying factor, we have seen, of glycosuria. Hinsdale[37] mentions fourteen clinicians who have observed glycosuria in this disease.

Again, if overactivity of the pituitary body provokes glycosuria by stimulating the adrenals, we should obtain, on stimulating the pituitary, the characteristic symptoms of overactivity of the adrenals. De Cyon[38] observed, in the course of experiments in a large number of animals (in support of his theory that the pituitary body serves through the thyroid gland to regulate the cerebral blood pressure) that "any, even slight pressure on the pituitary body immediately gives rise to a sudden variation of the blood pressure, and to a marked reduction of the beats of the heart, the strength of which is at the same time considerably increased." He also found that "electrical stimulation of the pituitary body, even with extremely weak currents, produces exactly the same phenomena as mechanical pressure, but in a much more intense manner."

These experiments have been repeated recently by F. Masay and amplified in such a manner as to distinctly locate in the pituitary the origin of the phenomena witnessed. His investigations showed that mechanical and electrical excitation of the pituitary body caused a marked rise of blood pressure—from 81 mm. Hg to 200.

23. Pavy: Proceedings Royal Soc. of London, vol. x, p. 27, 1860.
24. Blum: Deutsch. Arch. f. klin. Med., vol. lxxi, Nos. 2-3, p. 146, 1901.
25. Croftan: Amer. Med., Jan. 18, 1902.
26. Herter: Amer. Med., May 10, 1902.
27. Cyon and Aladoff: Bulletin de l'Acad. des Sciences de St. Pétersbourg, vol. vii, 1871.
28. Langley: Sympathetic and Other Related Systems of Nerves, in Schäfer's Text-book of Physiol., vol. ii, p. 616, Edinburgh, London, New York, 1900.
29. Hirschfeld: Système Nerveux et Organes des Sens de l'Homme, Paris, 1866.
30. Testut: Traité d'Anatomie Humaine, 3d ed., vol. ii, Paris, 1896.
31. Morris: Treatise of Anatomy, Philadelphia, 1893.
32. Gerrish: Text-book of Anatomy, Philadelphia and New York, 1899.
33. Berkley: Brain, Winter, p. 515, 1894.
34. Loeb: Centralblatt f. innere Med., vol. xix, p. 892, 1898.
35. Sternberg: Acromegaly, Nothnagel's Encyklopedia, p. 30.
36. Tamburini: Revista Sperimentale de Freniatria, p. 559, 1894, and p. 414, 1895.
37. Hinsdale: Acromegaly, p. 20, Detroit, 1898.
38. De Cyon: Arch. de Physiol. norm. et Path., vol. x, No. 5, p. 618, 1898.

in one instance—and that this effect was not prevented by section of both vagi. He also found that very soon after excitation the power of the heart became "greater than normal." We thus have a marked rise of blood pressure followed by an increase of cardiac power—precisely the physiologic characteristics not only of adrenal extractives, but also of blood taken from the suprarenal veins.

How does the pituitary body transmit its impulses to the adrenals?

Last year[4] I advanced the view that the anterior pituitary body was a sensory organ. This has been fully sustained by recent researches. Paremeschko[39] described a transverse slit or cavity between the glandular elements and the partition, which cavity communicated with the infundibulum, and was lined throughout with ciliated epithelium. Cadiat[40] observed a similar cavity communicating above with the tuber cinereum and lined with pavement epithelium. Müller[41] states that the internal wall of this slit, which forms part of the partition, is composed of a network of lymphatics lined with ciliated epithelium. Recently this region of the anterior lobe has been studied by the Golgi method by Gentès,[42] who found that this lobe was in reality composed of two parts, the glandular and the neural, the latter forming the inner wall of the cavity described by Paremeschko, Cadiat and Müller, which cavity he found to exist in the animals used, i. e., the cat and dog. Ordinary methods of staining suggested that this structure was composed of several layers of cylindrical stratified epithelium, but the Golgi method showed in addition that the interstices between these elements were penetrated throughout by sensory cells, each cell sending broad processes to the free surface and into the depths of the epithelial layer. The latter recalled "precisely that of the olfactory area of the nasal membrane."

Lloyd Andriezen,[2] after tracing the phylogenetic history of the pituitary body in all vertebrates, concluded that "the posterior lobe represents little beyond a neuroglia remnant of what was once a functional portion of the nerve tissue in ancestral vertebrata." My own researches having suggested that neuroglia fibers were not insignificant functionally as now believed, and that they were neural capillaries containing blood-plasma, under the dependence of neuroglia "cells," the posterior pituitary no longer appeared to me as a vestigial organ.

Berkley,[33] after examining about 2,500 slides of this organ, found different types of cells, and expressed surprise to find therein "beautiful specimens of several types of ependymal neuroglia cells extending from all portions of the middle and inferior regions of the cavity of the third ventricle." Kölliker[43] also observed such elements in human pituitaries. Even its outer layer was found by Luschka[44] and Müller,[45] who studied the pituitary body from myxine to man, and others, to be composed of gray substance recalling that of the cortex cerebri and similar to that found in the infundibulum.

As to the relations of the pituitary body with the base of the brain, i. e., the third ventricle, Ramon y Cajal[46] found that the posterior lobe was filled with a close and thick plexus of fine varicose fibers which ramify among the nerve cells. Longitudinal sections showed that these fibers were "terminal arborizations of a bundle which passes downward in the infundibulum." Some fibers were also observed to pass upward from the organ by way of its epithelial walls and to terminate in a mass of gray matter located behind the optic chiasm. Cajal also found that this group of cells (the giant-celled supra-infundibular nucleus) also sent some of their axons into the anterior lobe, terminals of which penetrated between the epithelial cells. This agrees with the description of older anatomists and histologists (Sappey, Luschka, Müller, etc.). Both the anterior and posterior lobes thus communicate through the infundibulum with the central gray substance, a region which Foster terms "a bed for the development of the nuclei of the cranial nerves and a continuation of the spinal gray matter."

The great nucleus above the optic chiasm and the infundibular structures is not only connected with the pituitary body, but also with: 1, the structures anterior to it; 2, the gray walls of the third ventricle on each side of it; and 3, the tuber cinereum or floor of this ventricle (of which the infundibulum forms part), which extends up to the mammillary bodies, two small organs immediately behind the pituitary body. Van Gehuchten,[47] for instance, recently found, in teleosts, that cells in the anterior lobe, which is composed mainly of the olfactory and visual organs, sent some of their "neuraxons" by way of the anterior basal bundle to the anterior portion of the infundibulum where they terminated, while neurons whose cell-bodies were in the infundibular structures sent theirs to the anterior lobe. He characterizes these nerves, respectively, as "motor" and "sensory." This coincides with results obtained in the monkeys by W. Spencer.[48] He slowed and arrested respiration by stimulating an area adjoining the olfactory tract in the orbital surface of the frontal area. The fibers traced by him seem to form part, he thought, of the olfactory tract bundle which passes over the optic chiasm around the infundibulum. Munk[49] has observed a close connection between the frontal respiratory area and the olfactory paths, and on exciting it, could arrest respiration, deepen the thoracic inspiration, and even cause diaphragmatic tetanus. Cyon also caused tetanic spasm by stimulating the pituitary body.

Important in this connection is the fact that anterior connections with the central gray matter exist which are independent of the hemispheres, including the striated bodies and optic thalami. Edinger[50] emphasizes the fact that the prominent olfactory tract runs backward to the level of the mamillary bodies, and "must pass through the most ventral regions of the corpus striatum; but it receives no fibers from this, as has been supposed." In fact, he states that in Goltz's dog—which lived eighteen months after removal of both

39. Paremeschko: Virchow's Archiv f. path. Anat. u. Physiol., vol. xxxviii, p. 429, 1867.
40. Cadiat: Anatomie Générale.
41. Müller: Jenaische Zeitschrift, vol. vi, 1891.
42. Gentès: Comptes-rend. de la Soc. de Biol., vol. lv, p. 100, 1903.
43. Kölliker: Handb. der Gewebelehre d. Menschen., p. 605, Leipzig, 1896.
44. Luschka: Der Hirnanhang und die Schildrüse des Menschens, 1860.
45. Müller: Jenaische Zeitschrift, vol. vii, 1891.
46. Ramon y Cajal: Anales de la soc. esp. d'hist. nat., 2d series, vol. iii (xxiii), Madrid, pp. 214-15, 1894.
47. Van Gehuchten: Anatomie du Système Nerveux, vol. ii, Louvain, 1900.
48. W. Spencer: Philosophical Trans. of the Royal Soc. of London, p. 605, 1894.
49. Munk: Ueber die Functionen der Grosshirnrinde, Berlin, 1890.
50. Edinger: Anatomy of the Central Nervous System in Man and in Vertebrates in General, Transl. by W. S. Hall, Philadelphia, 1899.

hemispheres and in which the optic thalami were partially destroyed—"the great tract of fibers from the olfactory field could be traced backward very clearly and distinctly to the corpus mamillare." So are all the structures of the central gray matter independent of the hemispheres. Von Monakow found that removal of the cortex did not cause primary degeneration of the tuber cinereum which contains the infundibulum, or even of the gray substance overlying the optic thalami.

This entails the need of cellular connections in the various regions of the third ventricle, including its walls, to receive impulses from various directions, irrespective of the hemispheres. Edinger found that in reptiles, amphibians and birds, the nucleus of the infundibulum extends around the walls of the ventricle, and he considers it as the probable source of the "supra-infundibular decussation formed of large fibers, which," he says, "descend to it from the gray matter of the ventricular walls." Again, Van Gehuchten found that while the bipolar cells (which, as is well known, are also present under the rods and cones of the retina, the olfactory membrane and other sensory organs) in the infundibular tissues, sent a tuft of dendrites to the surface of the latter, another tuft of "short irregular extensions terminate on the free surface of the ventricular cavity."

The central gray substance is thus supplied with direct paths from sensory organs and nervous extensions capable of forming links or synapses with others, all so arranged as to concentrate their impulses in the infundibular walls, and thence, judging from the cellular connections, into the pituitary body.

The spinal cord sensory impulses are no exception in this connection. A pigeon deprived of its hemispheres feels a fly that happens to alight on its head, and shakes it off; Goltz's dog, in which, beside the hemispheres, the optic thalami were functionally destroyed, refused food made bitter with quinin; Vulpian has shown that when the hemispheres, optic thalami, striated bodies, the corpora quadrigemina and the cerebellum were removed, animals still cry out when a foot or an exposed nerve is strongly pinched. The central gray axis alone remained here to receive impulses through at least a portion of the fillet, which, according to Foster,[51] is "a probable path of sensations of one kind or another from the body at large."

Two divisions of the fillet are so disposed anatomically as to reach the central gray substance, the fillet layer and the mesial fillet.

Edinger[50] states that the greater part of the former can be traced up from the nuclei of the sensory nerves and the posterior columns. "Meynert," adds this anatomist, "first demonstrated that in it we have a segment of the sensory tract. Embryology and comparative anatomy equally substantiate this position." This layer, also termed the "deep gray-white layer," after decussating in the medulla, passes upward in the gray substance of the aqueduct of Sylvius to the threshhold of the third ventricle. The other or mesial fillet also reaches up to this region; while some of its fibers go to the optic thalami, others terminate in the subthalmic region, i. e., beneath the walls of the third ventricle, which, we have seen, contain dendritic tufts of infundibular nerves. Now the fillet, from which both these tracts originate, not only contains, as emphasized by Edinger, fibers from all the sensory bulbar nuclei, but degeneration experiments have shown, he says, that "it may be separated into its various bundles for the different nerves, trigeminus, acusticus," etc. Stewart[52] refers to the mesial fillet as being enlarged in the medulla "by the accession of fibers from the sensory nuclei of the cranial nerves." In other words, this division of the fillet contains fibers of all sensory nerves, the vagus, glossopharyngeus, trigeminus, etc., and transmits them to the base of the brain.

The central gray substance *per se* can thus receive sensory impulses from all parts of the organism. It can likewise transmit motor impulses to all organs.

Van Gehuchten traced motor fibers to the anterior organs of the head. The motor paths to the spinal cord are clearly defined through the posterior longitudinal bundle, which passes down to the anterior columns of the cord. It is only traced usually to the motor oculi nucleus. Edinger says in this connection: "The posterior longitudinal fascicle sends its most anterior fibers much farther forward than to the nucleus of the oculomotorius. In the central gray matter, just anterior to the beginning of the aqueduct, is a collection of large ganglion cells, from which a number of such fibers (referring to the fibers destined for other cranial nerves) arise—the nucleus fasciculi longitudinalis posterioris.[53] This nucleus is demonstrable in all vertebrates. In mammals it lies in those places which ventrally intersect the posterior part of the corpus mamillare." Moreover, he found that in the human fetus, as well as in the lower vertebrates, it received fibers "from all motor nuclei throughout its long course." Finally, the vast functional importance of this motor path is emphasized by the words: "Inasmuch as it is found in all vertebrates, and always from the interbrain to the region of the anterior columns of the spinal cord, it must be recognized as one of the fundamental features of the brain."

While the central gray substance is evidently endowed with an autonomous mechanism through which it can receive all impressions from the periphery and transmit motor stimuli in every direction, what is the influence of the pituitary body in this connection? We know that it was by passing a current from the nasal cavities to the bulb that brothers Weber[54] arrested the heart. Cyon,[55] while studying experimentally the influence of a supposed secretion of the pituitary body in the cerebral blood pressure, found that inhibitory slowing of the heart could no longer be obtained after extirpation of the pituitary body. Even the reflex phenomena, sneezing, coughing, lachrymation, etc., provoked by irritation of the nasal mucous membrane, could no longer be obtained, irritants of the most active kind, ammonia, for instance, having lost all influence. "All the nerves connected with the nasal mucous membrane capable of causing reflex phenomena," says this physiologist, "that is to say, the end-organs of the trigeminus, olfactory, optic, auditory and glosso-pharyngeus, had lost their influence after the pituitary body had been removed."

When we realize how many different sensory and

51. Foster: Text-book of Physiology, 6th Amer. ed., Philadelphia, 1895.

52. Stewart: Manual of Physiology, 4th ed., Philadelphia and London, 1900.

53. An error in the original text causes the latter word to appear as "superioris"; the description and all illustrations to which the author alludes, however, refer to the posterior bundle. S. (See Figures 179, 43 and 44.)

54. Weber: Handwörterbuch d. Physiologie, vol. ii, 1846.

55. Cyon: Archiv fur die gesammte Physiologie, vol. lxxi, Nos. 7-8, p. 370, 1898, and vol. lxxii, Nos. 9-10, p. 431, 1898.

motor paths are involved in the production of the reflex phenomena referred to, and also that a high mammal deprived of its hemispheres will live months, whereas removal of the pituitary body in an adult animal inevitably causes death, the commanding importance of this organ can not but assert itself. Indeed, I have advanced the view that we have in this organ the governing center of the nervous system, meaning thereby the co-ordination center of the vasomotor and cranial nerves. It is when we observe the perfection with which all purely physical functions are performed in the absence of the hemispheres that the need of such an organ asserts itself, and that the identity of the pituitary body as such becomes apparent.

All this has also served to indicate the path of the secretory nerves to the adrenals.

The vertebral nerve being purely a vasomotor path, it need no longer be considered as a possible secretory nerve to the adrenals. Indeed, François-Franck and Hallion found that section of the five upper thoracic rami communicantes arrested the hepatic vasoconstrictor effects. They justly contend that if the impulses from the upper spinal cord actually passed to the sympathetic chain by way of the vertebral nerve, the vasoconstrictor effects should have persisted notwithstanding division of the thoracic rami.

There is a feature of their experimental result which these physiologists overlooked, however, namely, that if division of these rami, all of which are above the origin of what they rightly consider as the uppermost path (the sixth thoracic) for the true hepatic vasoconstrictors, arrested their constrictor effects, the five severed rami must have controlled these effects. In other words, the functional activity of these vasomotor nerves, must have depended on the functional integrity of some organ dominated by the five upper rami. The solution of this problem is easily found, in view of the fact that the portion of the sympathetic chain to which these five rami run is the only portion of this chain in which the nerves traced upward from the adrenals occur alone. It is plain, therefore, that it is by way of these five rami that the impulses, which produced the typical effects of adrenal extractions when the pituitary body was stimulated by Cyon and Masay, were transmitted to the adrenals by way of the sympathetic chain.

What is the nature of the process through which the pituitary body controls the functional activity of the adrenals? I can only recall that I have adduced evidence to show that the secretion of the adrenals, owing to its marked affinity for oxygen, took up this gas from the pulmonary air and became transformed into a compound I termed "adrenoxin." This was found to correspond with the substance which Salkowski[56] Schmiedeberg,[57] and subsequently Jaquet[58] and Abelous and Biarnés,[59] found in the blood, and which they specifically characterized an "oxidizing ferment." It is a constituent of blood serum and of the red corpuscles, and it yields its oxygen to sufficiently potent reducing agents. Its hold on the oxygen is sufficient to present its dispersion and not too great to resist the normal affinity of the tissue with which it comes into contact. The blood plasma laden with adrenoxin can thus circulate in microscopic capillaries, where corpuscles can not reach and sustain metabolism. Methylene-blue stain which, according to Ehrlich, requires oxygen saturation and alkalinity, indicate its presence in all nervous elements, including the nerve cell.

The manner in which the adrenals sustain the functional activity of the vasomotor nerves now suggests itself. The adrenoxin-laden blood plasma sustains the vital process of the vasomotor center, as well as that of the other organs. We have seen that when Cyon and Masay stimulated the pituitary body, the characteristic effects of adrenal secretion or extracts were produced. The blood's adrenoxin acts on it in a similar way, and the effects witnessed are in reality those of overstimulation of the same organ, and the effects evoked point to it as the chief vasomotor center.

Under these conditions the effects of adrenal extracts should coincide with those of the overactive vasomotor nerves. Langley,[60] after an exhaustive experimental study of the physiologic action of adrenal extract, remarks that it "runs parallel with the action of the sympathetic nerves on the blood vessels." He also deems it "noteworthy that the effects produced by suprarenal extract are almost all such as are produced by stimulation of some one or other sympathetic nerve. In many cases," he adds, "the effects produced by the extract and by electrical stimulation of the sympathtic nerve correspond exactly."

Important in this connection also is the fact that it is through some of these rami that the heart is supposed to receive its augmentor nerves, i. e., the three uppermost thoracic. Brown-Séquard,[61] in 1853, emphasized the predominating influence of the venous blood in cardiac dyamism. Oliver and Schäfer[62] and others have demonstrated that intravenous injections of adrenal extract had a powerful physiologic action on all muscles, but particularly on the heart muscle. In my work on the "Internal Secretions," I lay stress on the fact that the heart's contractile power depends to a great extent on the adrenal secretion which enters it by way of the inferior or vena cava, and that the secretion penetrates into the myocardium by way of its Thebesian foramina. This accounts: 1, for the augmentor effects; 2, for a part, at least of the rise of blood pressure which occurs, as is well known, when all the nerves to the heart are cut, and shows that the secretory nerve to the adrenals is a bundle formed of the three upper thoracic spinal nerves, which reach the splanchnic through the upper portion of the sympathetic chain in the thorax.

Biedl, we have seen, only stimulated the spinal nerves up to and including the third thoracic, but as he was trying to ascertain the presence of vasomotor nerves, he doubtless stimulated the third thoracic (which is not usually regarded as belonging to the vasomotor field of the splanchnic) too short a time to obtain secretory effects.

This also alters my own belief that the cervical sympathetic also serves as a link between the pituitary body and the upper end of the sympathetic cord in the thorax.

All this accounts for the fact long ago recorded by von Bezold and Bensen,[63] that section of both splanchnics lowered the blood pressure as much as section of

56. Salkowski: Virchow's Archiv f. path. Anat. u. Physiol., vol. cxlvii, No. 1. p. 1, 1897.
57. Schmiedeberg: Archiv f. exper. Path., vol. xlv, Nos. 4-5, p. 288, and No. 6, p. 379, 1881.
58. Jaquet: Arch. f. exp. Pathol., vol. xxix, Nos. 5-6, p. 386, 1892.
59. Abelous and Biarnès: Archives de Physiol., vol. vii, No. 5, p. 195, 1895.
60. Langley: Journal of Physiology, vol. xxvii, p. 237, 1901.
61. Brown-Séquard: Exper. Researches Applied to Phys. and Path., p. 104, New York, London and Paris, 1853.
62. Oliver and Schäfer: Journal of Physiology, vol. xvi, p. 1, 1894, and vol. xvii, p. 9, 1895.
63. Von Bezold and Bensen: Neue Würzburger Zeitung, 1866; Verh. d. Phys. Med. Gesells., Würzburg, January, 1867.

the spinal cord in the cervical region. It also explains why Strehl and Weiss found that, after removing one adrenal, the blood pressure could be lowered by clamping the suprarenal vein of the remaining organ, thus depriving the blood of any adrenal secretion, and that by releasing this vein the blood pressure was soon restored to its previous level.

Another organ closely related functionally with the pituitary body is the thyroid gland.

The secretion of the adrenals, by taking up oxygen in the lungs and carrying this gas to all parts of the organism, becomes the underlying factor not only of the pulmonary respiration, but also of tissue respiration. Last year I advanced the view that the purpose of the thyroid gland was to sustain the functional efficiency of the anterior pituitary body by means of its internal secretion. As such, therefore, this organ becomes itself associated with the general respiratory process. Suggestive, in this connection, is the fact that Andriezen,[64] after a study of the thyroid in lower animals and the results of its extirpation, reached the conclusion (although not aware of the nervous connection between the pituitary and the adrenals and the rôle of the latter in respiratory processes) that the morbid phenomena observed were ascribable to perturbations of the gaseous interchanges in the tissues. That the administration of thyroid extract enhances all oxidation processes of the organism, increasing the proportion of waste products in proportion, is now a familiar fact. The view that a functional—though undefined—relationship between the pituitary body and the thyroid exists, has long been defended by Stieda, Hofmeister, Gley and Andriezen, among others. Removal of the pituitary produces symptoms similar to those caused by extirpation of the thyroid, and the morbid symptoms of extirpation of this organ can be arrested by administering thyroid extract.

Again, as shown by Baumann, Hutchinson, Fränkel, Oswald and others, the active principle of thyroid extractive is an iodin compound. Considerable iodin has also been found in the pituitary body by Schnitzler and Ewald.[65] The presence in the latter organ of hypersensitive structures, and particularly of that recently described by Gentès, in which the end organs typify precisely those of olfactory end organs, adds further evidence to that already submitted by me, showing that it is through its secretion that the thyroid sustains the functional activity of the anterior lobe of the pituitary in which this structure was found.

Summing up the facts adduced, they seem to me to sustain the contention that the pituitary body, the adrenals and the thyroid jointly govern all oxidation processes, and, therefore, the functional efficiency of all organs.

If, as stated, the functions of the pituitary, the adrenals and the thyroid are interdependent—thus constituting what I have termed the "adrenal system"—impairment of the functional integrity of either one of them must morbidly influence that of the others. Overactivity of the thyroid, for example, by surcharging the blood with this organ's internal secretion, will overstimulate the pituitary body and through them the adrenals, thus causing the symptom-complex of general hyperoxidation: exophthalmic goiter. Conversely, lowering of the activity of the thyroid correspondingly lowers all oxidation processes, as instanced by the hypothermia of myxedema, cretinism, etc.

64. Andriezen: Soury, Système Nerveux Central, Paris, 1899.
65. Schnitzler and Ewald: Wiener klin. Woch., July 16, 1898.

The bearing of these various functions on the convulsive disorders mentioned may now be outlined.

Munk provoked diaphragmatic tetanus when he stimulated the respiratory area adjoining the olfactory organs, the fibers of which traverse the central gray substance, and Cyon caused tetanic spasm on stimulating the pituitary body. Prus,[66] after a very large number of experiments, concluded that the spasmogenic impulses were not transmitted by the pyramidal tracts, but by others which he termed "extrapyramidal" and which passed below, i. e., by way of the midbrain or tegmentum—structures through which, I may add, the motor impulses from the central gray substances pass. Hering has since confirmed these results, and produced epileptic seizures after dividing both upper motor tracts, and it may be said that evidence to this effect is rapidly accumulating. Very recently Nino Samaja[67] showed by electrical stimulation of the region below the cortex, and decortication in newly born and adult animals of various kinds, that while in the higher adult mammals the motor cortical zone could alone evoke clonic convulsions, the lower brain was the source of stimuli which caused tonic spasm; and, furthermore, that while in man clonic convulsions were also of cortical origin, "the seat of tonic convulsions is exclusively basilar."

The predominant rôle with which the central gray axis (which extends from the pituitary body to the end of the spinal cord) is shown to be endowed in the foregoing pages readily accounts for these observations. Indeed, Magnan[68] caused epileptic seizures in guinea-pigs, pups and kittens deprived of their hemispheres. We can not conclude from this, however, that because Cyon caused tetanic spasm by exciting the pituitary body, the seizures in Magnan's animals were due to a similar cause. In the first place, as is well known, irritation of the fourth ventricle will cause convulsions, and, as shown by Brown-Séquard, Maier and others,[69] convulsions caused by various toxics, including strychnin, may include the lower limbs after division of the cord. In fact, Kussmaul and Tenner[70] found that removal of both hemispheres and the central gray substance, including the pituitary body, did not arrest convulsions caused by toxics.

It seems to me that we are dealing with two sources of convulsions: The first, a toxic in the plasma circulating in the nervous elements; the second, excessive activity in the pituitary body, leading to a correspondingly marked oxidation in all organs, including the muscles. The first is certainly pathogenic, while the most that can be said of the second is that it is an exaggerated manifestation of normal functional activity, and, perhaps, protective.

We do not have to go beyond the symptoms that follow extirpation of the organs involved to show that this is true. After removal of the pituitary body the symptoms are, in Schäfer's words: "1, Diminution of the body temperature; 2, anorexia and lassitude; 3, muscular twitchings and tremors developing later into spasms; 4, dyspnea." After removal of the thyroid in the monkey, "the most characteristic symptoms," says the same physiologist, are "muscular tremors passing gradually into clonic spasms, and finally into convulsive attacks

66. Prus: Wiener klin. Woch., vol. xi, No. 38, p. 857, 1898.
67. Nino Samaja: Revue Méd. de la Suisse Romande, Feb. 20, p. 77, and March 20, p. 173, 1904.
68. Magnan: Arch. de Physiol. norm. u. Path., vol. v, No. 5, p. 115, 1873.
69. Maier: Rapport de l'Acad. de Vienne, vol. lxiv, 1871.
70. Kussmaul and Tenner: Jour. de la Physiologie de l'Homme, etc., vol. i, p. 201, 1858.

(tetany); there is also apathy and unsteadiness of gait, and, with the advance of time, the gradual supervention of a cretinic condition, together with a lowering of the body temperature and cutaneous sensibility." As to the adrenals, death occurs very soon after the removal of both organs, but long enough sometimes to indicate the kinship to the effects just outlined, including low respiration, anesthesia and hypothermia. "The animal lies on its side in a state of intense weakness," writes Auld, "is very drowsy, refusing to move, and may have convulsions."

In all three procedures we have diminution of the temperature and other signs of lowered oxygenation, and along with these, convulsions. We are evidently dealing, as a cause of the latter, with the first or pathogenic factor, i. e., a toxic. The identity of this toxic is readily accounted for: the avidity of the tissues for oxygen is such that it practically depletes not only the red corpuscles, but the plasma also, of this gas. Metabolism continuing in the tissues—though at a lower rate, as shown by the lowered temperature, the lassitude, the muscular weakness—waste products accumulate in the blood. Convulsions then appear, but as a terminal sign. Whether the supply of oxygen be reduced by removal of either of the three organs in question, or by withholding the air supply, as in asphyxiation, the one and same cause prevails, in my opinion, i. e., an accumulation of waste products in the blood plasma, including that which circulates within the neurons of the cortex and the central gray axis, and especially in their sensory terminals.

"In some animals, as in most carnivora," says Chittenden,[71] "complete removal of the thyroidal tissue is followed by a rapid development of symptoms indicating a marked irritation of the nervous and muscular systems, as manifested by tetanus, epileptiform convulsions, etc., and terminating in death."

Why do these products accumulate in the blood stream? The answer to this is afforded by the action of thyroid extract on the symptom-complex that thyroidectomy insures. Hoffmeister[72] found iodothyrin cuts short the symptoms that follow removal of the thyroid, including the convulsions. Baumann and Goldmann[73] showed that thyroidectomized dogs do not suffer from tetanic convulsions so long as adequate doses of iodothyrin are administered, and that they recur when the iodothyrin is withdrawn. Since, as emphasized by Hutchinson[74] and many other investigators, all the systemic oxidation processes are increased by the use of thyroid extractives, it is plain that oxidation is the underlying factor which prevents, either directly or indirectly, the accumulation of spasmogenic elements. Magnus Levy[75] and Scholz[76] found that thyroid extract increases the consumption of oxygen and the proportion of carbonic acid excreted. Mendel, Roos, Napier, Ord, Voit[77] and many other physiologic chemists have noted that it increased the excretion of the end-products of metabolism.

But the paramount point to us, therapeutists, is the fact that the convulsions ceased when under the influence of thyroid extract and the oxidation processes were brought to a sufficiently high level. Evidently the blood was purged of its toxic elements, the increased tissue respiration having entailed their conversion into benign eliminable products. In other words, the spasmogenic poison was overcome by the protective element of the organism, a product of its ductless glands. And this applies to any form of convulsion, whether it be due to accumulated waste products or to a specific toxic; whether, in a word, it occur during puerperal septicemia, epilepsy, hydrophobia or tetanus.

Now, what are the present mainstays in the treatment of these disorders? The bromids and chloral hydrate. "On mammals," says H. C. Wood, "the bromid acts very much as on frogs, inducing progressive paralysis, depression of temperature, and death by asphyxia when given in small poisonous doses." Of chloral, the same distinguished therapeutist says: "A most remarkable action of chloral is on the temperature; in this point all observers are in accord with Richardson of London, who has seen the temperature fall 6 F. in a rabbit. . . . Hammerstein has found that the fall of temperature is very rapid, 6 C. in an hour, and that it occurs in animals well wrapped up and laid in a warm place." If the protective, curative element in these dread diseases is hyperoxidation, what may we expect of induced hypooxidation? The mortality ratio of rabies, tetanus and puerperal eclampsia, treated on those lines, answers that question. These drugs reduce, it is true, the excitability of the sensory elements, but they aid the accumulation of the spasmogenic toxics by inhibiting the oxidation process through which these are destroyed.

Last year I advocated precisely the opposite course: lines of treatment which increase the functional activity of the adrenal system doing precisely what thyroid extract does after removal of the thyroid. Nicholson[78] has not only found that in puerperal eclampsia the normal enlargement of the thyroid—to which Lange called attention after examining 133 women—which betokens increased functional activity, was not present, but that the nitrogenous metabolism was lowered. He obtained excellent results by the use, with a pure milk, of 7½ grain doses of thyroid extract every three or four hours, and morphin (a drug which in therapeutic doses stimulates the adrenal system) as an adjunct. Now, if the adrenal system is involved in such processes, its general center, the pituitary body, should give evidence of excessive activity. In 1898, L. Comte[79] examined the pituitary body in a number of women who had died during pregnancy and found not only that this organ was hypertrophied in every case, but that the anterior lobe was alone the seat of the hypertrophy. P. E. Launois and P. Mulon[80] recently examined histologically the pituitary of two eclamptic women, each aged about 30, and were brought to conclude by histologic examination that during pregnancy the pituitary body gives evidence of marked overactivity.

This exemplifies, it seems to me, the condition involved in all toxemias attended with convulsions. The increasing tendency to use iodin, mercurial inunctions and other agents which tend powerfully to increase oxidation and general metabolism by enhancing the functional activity of the organism's protective system, seems to me, therefore, to merit encouragement.

The views advanced by me in January, 1903, in this

71. Chittenden: Trans. Cong. Amer. Phys. and Surgs., vol. iv, p. 87, 1897.
72. Hoffmeister: Deutsche med. Woch., No. 22, 1896.
73. Baumann and Goldmann: Münch. med. Woch., vol. xliii, p. 1153, 1896.
74. Hutchinson: British Medical Journal, July 16, p. 142, 1898.
75. Magnus Levy: Berliner klin. Woch., vol. xxxii, p. 650, 1895.
76. Scholz: Centralb. f. innere Med., vol. xvi, pp. 1041, 1069, 1895.
77. Mendel, Roos, Napier, Ord, Voit, quoted by Chittenden, Trans. Amer. Congress of Phys. and Surgs., vol. iv, p. 87, 1897.
78. Nicholson: Jour. Obstet. and Gynec. for British Empire, July, p. 40, 1902.
79. Comte: Thèse de doctorat, Lausanne, 1898.
80. Launois and Mulon: Annales de Gynéc. et d'Obstét, January, 1904, p. 2.

connection have recently received a striking confirmation in England. A. E. Wright,[81] formerly professor of pathology at the Netley School, referred to the presence "in considerable quantities in the blood" of a secretion the source of which he deemed unknown, and of which he thought diphtheria antitoxin was the most familiar example. Believing that, as he says, "all the protective substances" in the cure of disease "were to be regarded as produced by internal secretion," he employed Koch's new tuberculin in various conditions, to induce the appearance in the blood of the "antidotal substances" referred to, and obtained what he terms "extraordinarily good results" in some thirty cases of various kinds. "Patients with tuberculosis recovered," he is quoted as saying, "if they produced enough of the internal secretion to render their bodies uninhabitable by the tubercle bacillus." In the light of my own views, the tuberculin used by Dr. Wright merely did what several of our familiar drugs can do, provided, however, they be considered, not as direct antagonists of the morbid process that may be present, but as agents which, once in the blood, enhance the activity of the body's autoprotective resources, through the most sensitive of its sensory organs, the pituitary body.

DISCUSSION.

DR. HEINRICH STERN, New York City—In the investigations of the adrenal system so-called, physiologic investigation is by no means everything. The views and deductions of Dr. Sajous are so comprehensive and so revolutionizing that the bulk of the profession can not follow him. A good deal of the apathy of the profession as regards the acceptance of the ideas advanced by Dr. Sajous is due to the ill will borne him as an independent thinker. Those really opposed to his views are the professional laboratory laborers whose sterility of ideas is proverbial. However, many of the views advanced by Dr. Sajous still lack experimental confirmation. Again, it was Blum who first noticed glycosuria after injection of adrenalin. As a matter of fact, this and similar experiments do not explain anything. Their importance is always exaggerated. Glycosuria may follow the subcutaneous or intravenous injection of quite a number of other animal products, or that of a variety of drugs. To single out adrenalin as a specific glycosuria-producing substance is, therefore, an illogical undertaking. Beside, the administration of adrenalin, as practiced by Blum, is just as often not followed by glycosuria as it is followed by it.

DR. C. E. DE M. SAJOUS—Dr. Stern overlooks the facts that I mentioned Blum first among the observers who had found that adrenal extract caused glycosuria, and that his experiments were confirmed in this country by Croftan and Herter. I can not say that I have to contend with any of the ill will on the part of the profession to which Dr. Stern refers. New lines of thought require time for their development, and mine can not be expected to form an exception. All I can assert is, that they would never have been advanced had I not been certain that they were poised on a solid foundation.

THE AXIS OF ASTIGMATISM.*

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NEW YORK CITY.

Twelve years ago[1] I presented some views on the axis of astigmatism. Those views consisted partly of propositions to be verified or denied by experience, partly of facts as developed in my practice.

I set forth the initial proposition that the axis of astigmatism does not occur at haphazard, that there is a regularity in its occurrence in a given eye, and that there is a certain definite relationship between the axes in two eyes when both happen to be astigmatic.

The experience of the last twelve years has amply verified both the propositions and the facts set forth at that time. This experience embraces 1,176 cases of astigmatism taken from my private practice.

I desire to state that I shall employ the nomenclature indicated by the trial frames ordinarily in use, in which the circle is divided into halves of 180° each, with the 0° starting on the right on both sides in the horizontal plane as one looks at the frame. (Fig. 1.)

I consider this method eminently simple and reasonable, and if it were adopted universally to the exclusion of all others it would add greatly to the accuracy of the surgeon and optician, and would make a prescription written in one country easily, quickly and accurately comprehended in all others.

Inasmuch as I have adopted this method, I shall not discuss that one by which the tilting of the upper or lower end of the glass toward, or away from, the median line is indicated. I consider the method open to many and obviously sound objections.

In order, therefore, that I may pass at once to the discussion of my subject, permit me to take up the consideration of the axis of that cylindrical glass in the various forms of astigmatism *seriatim*.

I shall use the term "axis of astigmatism" synonymously with the axis of the glass that corrects it.

ASTIGMATISM IN A SINGLE EYE.

1. Simple hyperopic astigmatism in a single eye.

In the great majority of cases the axis of this form of astigmatism is vertical—that is, 90°. If a deviation from this position takes place, it must be in the direction of the horizontal axis on either of the two sides of the vertical, and the first position assured by such a deviation is the axis 75° or the axis 105°, which in this case is a deviation of 15° from the vertical position. The next axis of preference is either 135° or 45° on the other side of the vertical.

Now, the point which I wish to emphasize is that these five position, 90°, 75°, 45°, 105° and 135°, are the positions of preference in hyperopic astigmatism. When other axes than these are found they are irregular and unusual, and are the exceptions that prove the rule.

The arc of 90° extending from 135° to 45°, I describe as the realm of hyperopic astigmatism.

In this arc, as stated, 90° is the most usual, 105° and 75° less, and 135° and 45° the least usual.

The percentage of irregularities in this realm will be referred to later.

The axis 0° occurs by exception, and has been called the axis against the rule. It should be called simply horizontal, for any axis that lies beyond 135° or 45° toward the horizontal plane, is against the rule I would, therefore, suggest that the expression, "against the rule," in hyperopic astigmatism, be used to describe any axis that lies beyond 135° or 45° toward the horizontal plane. (Fig. 2.)

2. Simple myopic astigmatism in a single eye.

The axis of simple myopic astigmatism is, in the large majority of cases, horizontal. If the astigmatism selects a deviation from this axis, it selects the axis that is 15° from the horizontal on one side or the other; in other words, the axis 165° or the axis 15° is chosen.

The arc of 30° extending 15° to 165° I describe as the realm of myopic astigmatism.

In this realm the horizontal is by far the most frequent, and the axes 15° and 165° occur with nearly equal frequency.

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81. Wright: Brit. Med. Jour., March 19, p. 667, 1904.

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. New York Med. Jour., June 25 and July 2, 1892.

When, as in rare exceptions, the axis lies vertical, it is said to be against the rule. Whenever the axis lies beyond 15° or 165°, toward the vertical plane, it is against the rule. I, therefore, suggest that the expression, "against the rule," in myopic astigmatism be used whenever the axis lies beyond 15° or 165°, toward the vertical meridian.

The percentage of irregularities in this realm will be referred to later. (Fig. 3.)

3. Compound hyperopic astigmatism in a single eye.

Statements made with reference to the axis in simple hyperopic astigmatism, hold in compound hyperopic astigmatism, for obvious reasons.

4. Compound myopic astigmatism in a single eye.

The axes of compound myopic astigmatism are the axes of simple myopic astigmatism.

5. Mixed astigmatism in a single eye.

It may be broadly said that the rules which obtain in hyperopic and myopic astigmatism hold good when these conditions occur in the same eye, as in mixed astigmatism. The axis of the hyperopic astigmatism is restricted, as a rule, to the realm marked out for this error, and to the axes of preference in this realm. The axis of the myopic astigmatism is restricted to its realm and the axes of preference contained therein, so long as this is permitted by the axis of the hyperopic astigmatism. The two axes invariably, and of necessity, lie at right angles to each other.

If the hyperopic axis lies at 75°, the myopic axis will

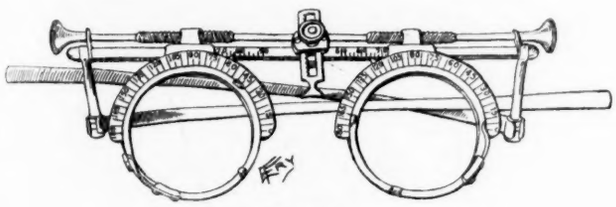

Figure 1.

lie at 165°; if the myopic at 15°, the hyperopic will lie at 105°. If, however, the hyperopic axis lies at 135° or 45°, the myopic axis will be forced from its proper realm and will be compelled to invade the realm of the hyperopic axis. For example, if the hyperopic axis lies at 135°, the myopic will be at 45°, or *vice versa*.

The following are the regular positions of the axes in mixed astigmatism in a single eye. (Fig. 4.)

ASTIGMATISM IN BOTH EYES.

We come next to the consideration of the axis of astigmatism in each eye with relation to that of its fellow.

Before entering this subject, I would refer to the initial proposition relative to the definite relationship existing between the axes in the two eyes when each is astigmatic.

Experience has shown me that without a doubt the axes in the two eyes have a definite relationship to each other, and, indeed, this is necessary if the positions of preference in each eye separately be admitted or proved.

When the axes in the two eyes have the same position, I call them correspondent or in correspondence. If each be at 90°, they are correspondent. If each be at 180°, they are correspondent. When the axes lie off the horizontal or vertical and occupy the same position as indicated by the nomenclature of the half disc of the trial frame, they are no less correspondent, and it is when this phenomenon arises that the value of this nomenclature over the other is demonstrated. Suppose, for example, the axis in each eye is found to be at 75°, the axes will be tilted, the upper end of one toward the median line, the upper end of the other toward the temple. But the statement that the axes are "75° in correspondence," or simply the statement that they are both 75°, makes the facts perfectly clear.

When each axis is 135° or 45°, the bare statement of the fact is similarly clear.

At first sight the adjective, parallel, would appear, under these conditions, to be appropriate, but it would obviously be inadequate and inaccurate when each axis is horizontal or vertical. For, while they might be said,

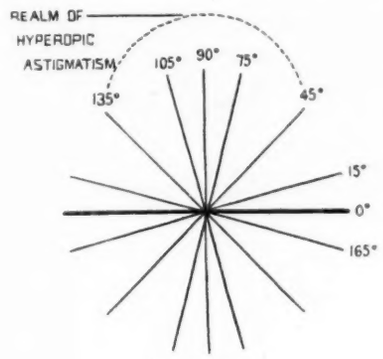

Figure 2.

in the case of 90°, to be parallel, in the case of 180° or 0° they could not be said to be parallel; for, if each axis is continued toward its fellow, they will meet in the same plane and become coincident. The multiplication of terms is ill advised, and inasmuch as the expression, "in correspondence," covers all the cases cited above, I suggest this to indicate the fact that the axis of astigmatism lies in the same meridian in each eye. I, myself, have used and taught this expression for the last twelve years.

1. Simple hyperopic astigmatism in both eyes.

In broad terms, the axes correspond or are at angles to each other. If, for example, the axis of one eye is vertical, that of its fellow is vertical. If the rare occurrence of the axis in the horizontal be found in one eye, the axis of the fellow is also horizontal. If the right axis be found to be 75°, the axis in the left eye is usually

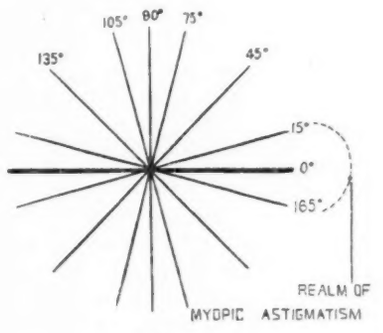

Figure 3.

105°. If, therefore, these two axes be prolonged upward and inward in straight lines, they will both converge toward the median line and intersect one another at the angle of 30°. (Fig. 5, B.)

If the right axis be found at 105°, the left will lie at 75°, and a continuation of these axes downward and inward, in straight lines, will cause them to converge toward the median line and intersect at the angle of 30°. (Fig. 5, C.)

If the right axis lies at 135° and the left at 45°, a

continuation of these lines downward and inward will cause them to intersect at an angle of 90°. (Fig. 5, D.)

If the right axis lies at 45° and the left at 135°, they will intersect at the angle of 90°, if continued upward and inward.

These five positions are, as heretofore set forth, the axes of preference lying within the realm of hyperopic astigmatism; and the position of the axis in each eye relative to its fellow in the opposite, is the usual one. Nevertheless, it is possible for the axes in the two eyes to be in correspondence. This is exceedingly rare, but it nevertheless occurs.

The following correspondent axes of 105° occurred four times in 1,176 cases of astigmatism. (Fig. 5, G.)

The following correspondent axes, 135°, occurred once in 1,176 cases of astigmatism. (Fig. 5, H.)

Correspondence in 45° and in 75° did not occur at all in 1,176 cases.

It has been stated that the myopic axis may invade the realm of the hyperopic axis.

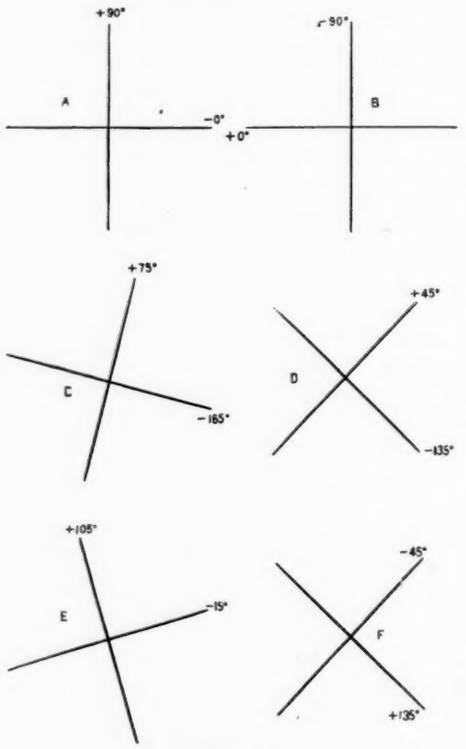

Figure 4.

The following case, which occurred once in the above-mentioned number of cases, is remarkable (Fig. 6):

2. Simple myopic astigatism in both eyes.

If the axis of one eye lies horizontal, the axis of the fellow is usually horizontal. If the axis of the right eye is 15°, the axis of the other is usually 165°, and if these two axes be continued in straight lines upward and inward they will intersect at an angle of 30°. (Fig. 7, B.)

It is possible, however, for the oblique axes to be in correspondence.

The following axes in correspondence occurred 3 times in 1,176 times (Fig. 7, C.):

Hyperopic astigmatism in correspondence invaded the myopic realm once in 1,176 times. (Fig. 8.)

The axes 15° in correspondence occurred twice in 1,176 times. (Fig. 7, D.)

At times the axes in each eye lie at 90°. (Fig. 7, E.)

There are three regular positions, then, for the axes in myopic astigmatism in both eyes, 180°, 15° and 165°.

When the axes are oblique they will intersect when prolonged toward each other at an angle of 30°.

3. Compound hyperopic astigmatism in both eyes.

The rules that have been drawn for the axes in simple hyperopic astigmatism in both eyes obtain for the axes of compound hyperopic astigmatism in both eyes.

4. Compound myopic astigmatism in both eyes.

The rules that have been drawn for the axes in simple myopic astigmatism in both eyes obtain for the axes of compound myopic astigmatism in both eyes.

5. Mixed astigmatism in both eyes.

In mixed astigmatism in both eyes the hyperopic axis is usually vertical in each eye, and the myopic axis is usually horizontal in each eye.

Matters, however, become somewhat complicated the moment any departure from the most usual position takes place in mixed astigmatism.

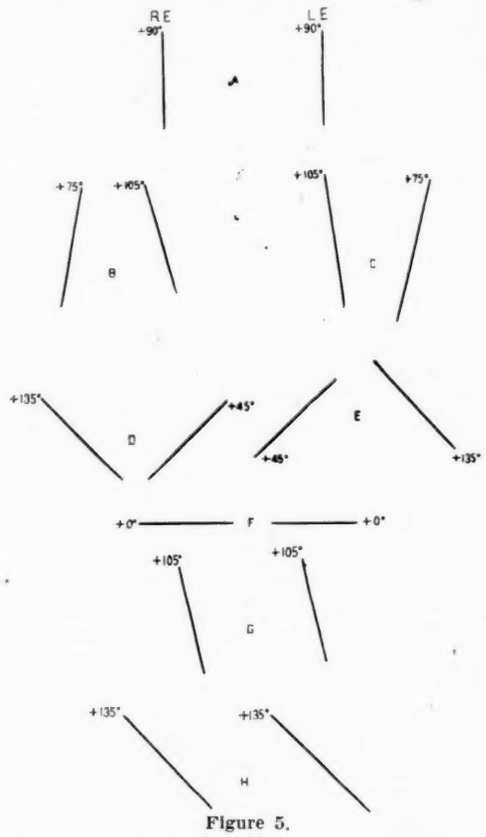

Figure 5.

The following are the usual positions of the axes in mixed astigmatism in both eyes (Fig. 9):

It is, of course, possible for correspondence to take place similarly in the two eyes. This, however, is so exceedingly rare that I found it but once in 1,176 cases. (Fig. 10.)

We come on now to the consideration of irregular cases—that is, those in which the axis occurred within the confines of its own realm, but at unusual positions, not the positions of preference.

Eighty of these irregular cases were found among 1,176 cases of astigmatism, .68 per cent.

These figures prove conclusively that there are axes of preference for hyperopic and myopic astigmatism within the realm proper of each, and amply justify the propositions and views set forth by me in 1892.

The percentage of irregularity (.68 per cent.) is so small, and the percentage of regularity, 99.32 per cent.,

so great, that a conclusive, definite statement is warwanted.

IRREGULARITIES WITHIN THE REALM OF HYPEROPIC ASTIGMATISM.

The axis of 60° occurred 25 times in 80 irregular cases; that is, 31 per cent.

The axis 120° occurred 24 times in 80 irregular cases; that is, 30 per cent.

The axis 110½° occurred once in 80 irregular cases.

Myopic astigmatism once in the irregular cases invaded the realm of hyperopia; this axis was exceedingly erratic; it was at 70°.

With the exception of the just mentioned erratic axis of myopic astigmatism, it is shown by the above figures that only 49 cases of irregularities occurred in the realm

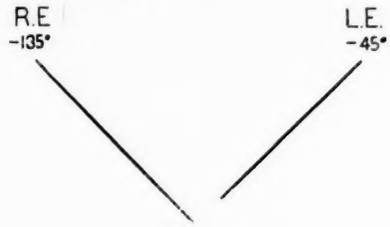

Figure 6.

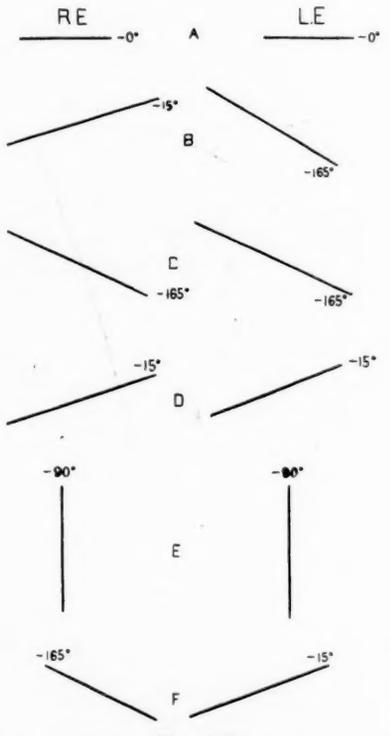

Figure 7.

of hyperopia, out of 1,176 cases, and that of these the axes lay: 25 at 60° and 24 at 120°. This shows conclusively that if the ordinary axes of preference in hyperopic astigmatism are not chosen, the axis 60° or 120° is preferred.

IRREGULARITIES IN THE REALM OF MYOPIC ASTIGMATISM.

The axis 170° occurred five times in 80 irregular cases—that is, 6 per cent.

The axis 10° occurred once in 80 irregular cases.

The axis 2½° occurred once in 80 irregular cases.

It is conclusively shown by the figures that only 7 cases of irregularity occurred in the realm of myopic astigmatism, out of 1,176 cases, and that if the ordinary axes of preference in this realm are not chosen, 170° is preferred.

We have already pointed out the realm of hypermetropic astigmatism and that of myopic astigmatism. The areas occupied by these two realms, however, do not comprise the entire circle. For lying between 135° and 165° on the one side is an arc of 30°, and between 45° and 15°, on the other, another arc of 30°, which may be denominated the realms of neutrality, and which may be invaded by either the myopic or hyperopic axes. (Fig. 11.)

We shall regard first the axes which lie within the arc of 30° to be found between 15° and 45°.

Hyperopic astigmatism, with the axis at 30°, occur-

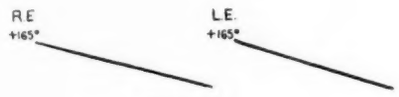

Figure 8.

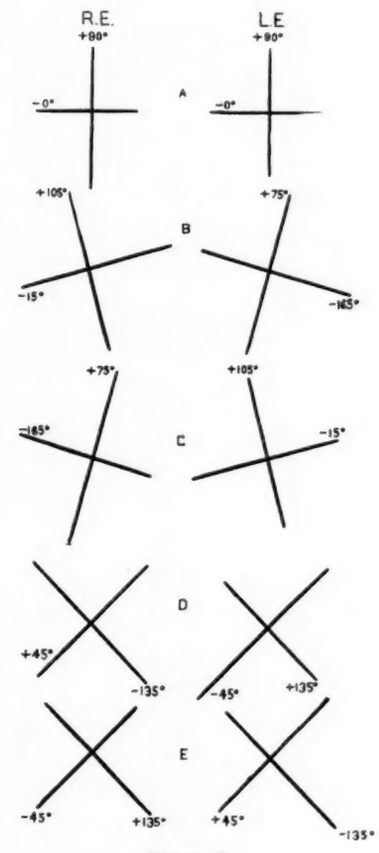

Figure 9.

red fourteen times in the 80 irregular cases referred to, 17 per cent.

Myopic astigmatism, with the axis at 30°, occurred seven times in the 80 irregular cases, 8 per cent.

Myopic astigmatism occupied the axis at 20° four times in the 80 irregular cases, 5 per cent.

The axis 30° and 20° were the only two axes selected in this arc of neutrality, hyperopic astigmatism occurring fourteen times at 30°, myopic astigmatism occurring seven times at 30°, and only myopic astigmatism occurring four times at 20°.

From these facts it appears that there are two axes of preference in this arc of neutrality, 30° and 20°,

and that 30° is twice as usual in hyperopia as in myopia and that myopia alone occurs at 20°.

We shall now consider the arc lying between 135° and 165°.

Hyperopic astigmatism occupied the axis 150° seven times in the 80 irregular cases, 8 per cent.

Myopic astigmatism occupied the axis 150° seven times in the 80 irregular cases, 8 per cent.

Myopic astigmatism occupied the extremely erratic axis 155° once in these cases.

From the above it appears that there is only one axis of preference in the arc of neutrality lying between 135° and 165°, and that that axis is 150°.

The axis 155° occurred only once, while the axis 150° occurred fourteen times, being occupied seven times by

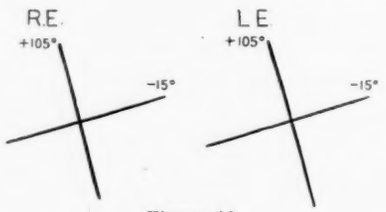

Figure 10.

myopic astigmatism and seven times by hyperopic astigmatism.

No other axes occurred in the arc in the 1,176 cases of astigmatism.

It is interesting to note that correspondence occurred five times in the 80 irregular cases, 6 per cent., and in these five times 60° occurred twice, 30° twice and 120° once.

It has been stated that there is a regular relationship between the axes of astigmatism in the two eyes when the axes occupy the positions of preference in the regular realms of myopia and hyperopia.

It is interesting to observe that the same regular relationship exists when the axes are irregular, as, for example, in Figure 12. The intersection of these two axes form an angle of 90°. Again, in Figures 13 and 14, an angle of 60° is found.

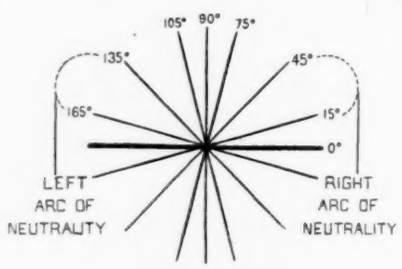

Figure 11.

The following axes in the two eyes occurred twice in 1,176 cases, but though these axes were proved correct time after time by separate tests of each eye, the patient in one case could not wear the glasses and was compelled to wear the axis at 180°. (Fig. 15.)

There were 1,042 cases of bilateral astigmatism. In 142 cases there was non-conformance with the rule in the relationship of the axes, 13 per cent. *Per contra,* there were 901 cases of conformance, 87 per cent. This percentage of conformance establishes the rule.

It is plainly shown by all these facts that when astigmatism occurs in the two eyes, the axes bear a definite relationship to each other, whether the astigmatism occurs in its proper realm, whether it invades that of its fellow, or whether it occurs in the realms of neutrality.

It is further shown that the axes in the two eyes when continued toward the median line, intersect each other at 30°, 60° or 90°, i. e., in the multiples of 30°.

The routine which I am accustomed to use in determining the quality, amount and axis of astigmatism, is to use skiascopy first, then the direct method, and finally the ophthalmometer.

In clinical work, and frequently in private practice, I use a modification of Placido's disc, constructed on the lines laid down above with reference to the realms of myopic and hyperopic astigmatism. I have employed the ophthalmometer regularly in private practice for eight years only. Antecedent to that time, I used it irregularly or not at all.

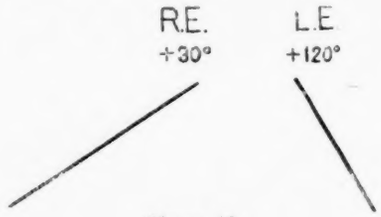

Figure 12.

I rely on the shadow test for the axis of astigmatism as confidently, if not more confidently, than I do on the ophthalmometer. The latter instrument frequently fails to give the exact axis as established by the subjective test, when the astigmatism is oblique. When, however, the axis lies horizontal or vertical, I have found the ophthalmometer true. All who use skiascopy know it is possible to see when the shadow is just off the vertical or horizontal, and when this is the case it may with reasonable certainty, be assumed to be at 75° or 105° in the case of hypermetropic astigmatism, or at 15° or 165° in the case of myopic astigmatism.

If the shadow moves in a plane more than 15° beyond the vertical or horizontal, it will be found, as shown by my statistics, in one of the positions of preference which lie beyond these planes.

I wish to state emphatically, however, that I consider the subjective test the crucial test, and I regard its decision as final.

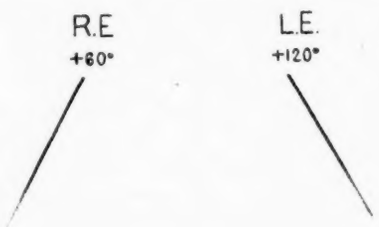

Figure 13.

When the patient is not intelligent enough to establish the fact conclusively, that axis is selected which is indicated by the sum of the evidence furnished by all the methods.

In using my modification of Placido's disc (Fig. 16) I use a + 4 D., held in one hand, behind the aperture.

CONCLUSIONS.

1. The axis of astigmatism does not occur at haphazard.

2. There is a realm of preference and there are positions of preference within the realm for hyperopic and myopic astigmatism, respectively.

3. The realm of hyperopic astigmatism is the arc of

the circle, inclusive of the axes, 45° and 135°, and the positions of preference in this realm are the axes 90°, 105,° 135°, 75° and 45°. The realm of hyperopic astigmatism is, therefore an arc of 90°.

4. The realm of myopic astigmatism is the arc inclusive of the axes 15° and 165°, and the positions of preference in this realm are the axes 180°, 15° and 165°. The realm of myopic astigmatism is, therefore, an arc of 30°.

5. There is a realm or arc of neutrality of 30°, lying between 15° and 45° on the one side of the circle, and 135° and 165° on the other.

The arc of 30° lying between 15° and 45° may be called the right arc of neutrality, since it lies on each side to the right as one looks at the spectacle frame.

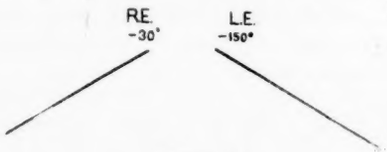

Figure 14.

The arc of 30° lying between 135° and 165° may be called the left arc of neutrality, since it lies to the left on each side as one looks at the spectacle frame.

Within the right arc of neutrality, 15° to 45°, the axes of preference are 30° and 20°, and 30° occurs twice as usual in hyperopia as in myopia, and myopia alone occurs at 20°.

Within the left arc of neutrality, 135° to 165°, there is one axis of preference, viz., 150°, and this occurs with equal frequency in myopia and hyperopia.

6. Of 1,176 cases of astigmatism, 80 cases were found in the realms of hyperopia and myopia in which the axes did not lie in the positions of preference. These are exceptional irregular cases.

The percentage of irregularity within the realms of hyperopia and myopia was 0.68 per cent.

Per contra, the percentage of preference was 99.72 per cent.

These facts establish the correctness of the preceding statements touching the positions of preference within the realms of hyperopia and myopia.

7. If the ordinary axes of preference in the realm of hyperopia are not chosen, the axes 60° and 120° are selected with equal frequency.

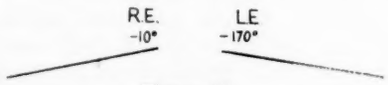

Figure 15.

8. If the ordinary axes of preference in the realm of myopia are not chosen, the axis 170° is selected.

9. Of 1,176 cases, 54 were found in which the hyperopic axis lay at 180°, .4+ per cent.

10. Of 1,176 cases, 21 were found in which the myopic axis lay at 90°, 1.8 per cent.

11. From these facts it is obvious that the hyperopic axis is found twice as frequently in the horizontal meridian as the myopic in the vertical meridian.

12. When astigmatism occurs in each eye, the axes bear a definite relationship to each other.

13. They may occupy the same position, in which case they are correspondent or in correspondence, or they may be inclined to the median line at a certain definite angle which is the same in each eye.

14. The angles at which they are inclined to the median line are 30°, 60° or 90°, or multiples of 30.

15. This obtains whether the axis lies in its own proper realm, in the realm of opposite quality, or in either of the realms of neutrality.

16. Of 1,043 cases of astigmatism in both eyes, there were 142 cases of non-conformity with the above statement, i. e., 13 per cent. *Per contra,* there were 901 cases in which there was conformity, i. e., 87 per cent.

These facts establish the correctness of the preceding conclusions touching the relationship of the axis in each eye to its fellow in the other eye.

17. There were 16 cases of correspondence all told, in 1,176 cases, 1.4 per cent. Of these 16 cases, 11 occurred in the axes of preference; of the remaining 5 cases, correspondence at 30° occurred twice, at 60° twice, and at 120° once.

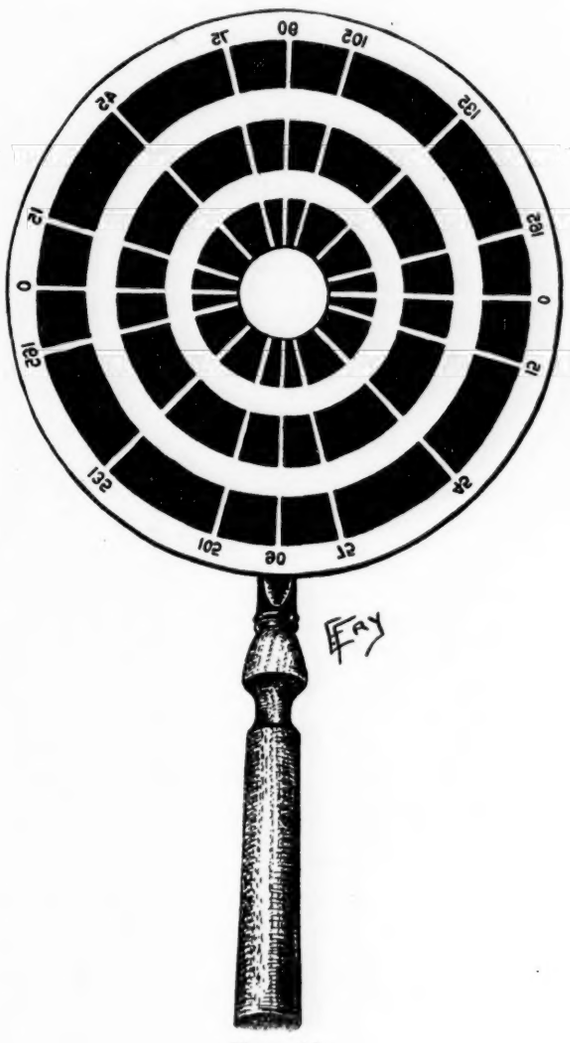

Figure 16.

18. The occurrence of the number 15, or its multiples, in the axis of astigmatism in each eye separately, as indicated in the positions of preference in every realm, and in the relationship of the axes in the two eyes toward each other, is remarkable, and warrants the conclusion that the axis of astigmatism does not occur at haphazard; that the law which governs it is a law of multiples, and that 15 is the common multiple.

19. The method of indicating the axis of astigmatism furnished by the ordinary trial frame in common use, is without doubt the simplest and most accurate, and should be universally employed.

34 W. Thirty-sixth Street.

THE RELATION OF CORNEAL CURVATURES TO THE REFRACTION OF THE EYE.*

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Professor of Ophthalmology, Denver and Gross Medical College.
DENVER.

I have included in this report all cases of refraction examined under a cycloplegic that came under my care from December, 1901, to December, 1903. The errors of refraction were estimated in the usual manner with trial lenses. The instrument used in making the corneal measurements was the ophthalmometer of Chambers, Inskeep & Co. On the side of one of the recording wheels the curvature of the corneal meridians can be read off in millimeters. This instrument, so far as I know, is accurate. It does not measure corneal meridians whose radii of curvature are shorter than 6.85 mm., nor of those longer than 9.00 mm.

TABLE 1.

Radius of Corneal Curvature Measured in Millimeters.	Number of Meridians Found with This Curvature.	Number of These Meridians Found To Be Hyperopic in Refraction.	Number Found To Be Myopic in Refraction.	Number Found Emmetropic.	Aggregate Amount of Hyperopia.	Aggregate Amount of Myopia.	Average Hyperopia.	Average Myopia.
9.00	....	....	...	...	.....	.....	...	....
8.93	....	....	...	...	.....	.....	...	....
8.87	....	....	...	...	.....	.....	...	....
8.80	....	....	...	...	.....	.....	...	....
8.75	2	2	...	...	6.50	.....	3.25	....
8.70	....	....	...	...	.....	.....	...	....
8.65	....	....	...	...	.....	.....	...	....
8.60	....	....	...	...	.....	.....	...	....
8.55	6	4	...	2	9.50	.....	1.58	....
8.50	7	5	...	2	7.25	.....	1.03	....
8.45	13	11	2	...	12.50	7.00	0.96	0.54
8.41	11	8	3	...	19.75	12.00	1.79	1.09
8.36	31	24	3	4	64.25	9.50	2.17	0.36
8.31	17	11	2	4	15.25	4.00	.90	.25
8.26	37	25	7	5	42.00	15.25	1.10	.41
8.21	39	25	10	4	47.75	30.00	1.22	.80
8.16	71	47	15	9	70.75	58.75	.90	.80
8.11	38	24	10	4	41.50	32.75	1.08	.85
8.05	74	52	12	10	68.25	24.00	.90	.30
8.00	54	35	12	7	44.25	30.75	.80	.50
7.95	122	91	12	19	107.50	18.25	.80	.10
7.90	80	59	12	9	83.00	12.25	1.05	.10
7.86	117	72	27	18	70.75	38.00	.60	.30
7.82	115	83	14	18	76.50	43.50	.60	.30
7.78	168	101	35	32	102.25	86.25	.60	.50
7.74	83	54	13	16	62.00	46.50	.70	.50
7.70	149	98	29	22	105.75	47.50	.70	.30
7.66	91	56	17	18	53.50	41.75	.58	.40
7.62	145	81	41	23	97.75	86.00	.67	.60
7.58	58	36	12	10	31.00	16.25	.53	.28
7.52	119	81	21	17	48.75	27.75	.40	.22
7.48	58	31	18	9	31.25	33.25	.54	.59
7.44	154	59	83	12	57.50	89.00	.37	.58
7.40	37	23	8	6	22.75	7.75	.60	.20
7.37	49	23	14	12	19.75	29.75	.40	.60
7.34	29	12	13	4	10.00	30.50	.34	1.05
7.31	45	19	22	4	19.00	62.75	.42	1.38
7.27	13	5	4	4	4.50	8.25	.34	.63
7.23	8	3	4	1	2.50	20.75	.31	2.59
7.19	8	3	3	2	4.50	15.00	.62	1.87
7.15	14	4	8	2	5.25	27.75	.37	1.97
7.11	4	2	2	...	3.00	3.00	.75	.75
7.07	9	4	3	2	4.25	7.75	.47	.80
7.03	5	....	4	1	.....	5.50	....	1.10
7.00	4	....	4	...	.....	3.75	....	.93
6.97	1	....	1	...	.....	1.00	....	1.00
6.93	1	....	1	...	.....	2.75	....	2.75
6.90	5	....	5	...	.....	22.75	....	4.55
6.85	1	....	1	...	.....	1.50	....	1.50
	2092	1273	507	312				

Reference to Table 1 shows that out of 2,092 corneal meridians examined, 1,273 were hypermetropic in refraction, 507 myopic and 312 emmetropic. It was found that the instrument measured all corneæ that came under my observation, except one case of conical cornea and one cornea examined soon after cataract extraction. Its field of measurement was found to be more than sufficient for all practical purposes. The table shows that of the 2,092 meridians examined none was found of a shorter radius of curvature than 6.85 and none longer than 8.75 mm.

Some explanation of my tables is necessary. The first column shows the radius of each corneal curvature as measured in millimeters. Columns 2, 3, 4 and 5 are self-explanatory. Column 6 is the total meridional refraction found to be hypermetropic, and is expressed in dioptries. Column 7 records the total refraction of the meridians found to be myopic. In Column 8 the aggregate amount of hypermetropia is divided by the total number of meridians recorded in Column 2. In Column 9 the same division is carried out with the myopic meridians. It may be asked why the aggregate hypermetropia was not divided simply by the number of meridians found hypermetropic, and the aggregate myopia by the number of meridians found myopic. If this had been done the number of meridians found to be emmetropic would not have entered into the equation, nor would we have the true average of ametropia of the total number of meridians with a given curvature. You will observe that out of 2,092 meridians examined, there were 168 meridians whose radius of curvature was 7.78 mm. This meridian stands about midway between the extreme curvatures. It was hypermetropic in refraction in 101 instances and emmetropic in 32. These figures record the greatest number of hypermetropic and emmetropic meridians. It will also be observed that the number of hypermetropic and emmetropic meridians recorded increases gradually from the center toward the top and bottom of the table.

TABLE 2.

Radius of Corneal Curvature Measured in Millimeters.	Number of Meridians Found with This Curvature.	Number of These Meridians Found To Be Hyperopic in Refraction.	Number Found To Be Myopic in Refraction.	Number Found Emmetropic.	Aggregate Amount of Hyperopia.	Aggregate Amount of Myopia.	Average Hyperopia.	Average Myopia.
9.00 to 8.80	....	....	...	...	.....	.....	....	....
8.75 to 8.60	2	2	...	...	6.50	.....	3.25	....
8.55 to 8.41	37	28	5	4	49.00	19.00	1.33	.51
8.36 to 8.21	124	85	22	17	169.25	58.75	1.36	.48
8.16 to 8.00	237	158	49	30	224.75	146.25	.95	.61
7.95 to 7.82	434	305	65	64	337.75	111.50	.80	.25
7.78 to 7.66	491	309	94	88	427.50	222 00	.90	.45
7.62 to 7.48	380	229	92	59	208.75	163.25	.55	.45
7.44 to 7.34	269	117	118	34	110.00	157.00	.41	.60
7.31 to 7.19	74	30	33	11	30.50	106.75	.41	1.44
7.15 to 7.03	32	10	17	5	12.50	44.00	.39	1.37
7.00 to 6.85	12	....	12	...	.....	31.75	....	2.64
	2092	1273	507	312				

Table 2 groups the meridians of the first table in fours. In this way the averages of hypermetropia and myopia are more striking. The longer the radius of corneal curvature, the greater is the average of hypermetropia, and the shorter the radius of corneal curvature, the greater the average of myopia. This is striking enough in Table 1, but in Table 2 the reduction in the average hypermetropia from the meridian of greater to that of lesser radius is very striking indeed. The av-

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

erage myopia gradually increases in the same ratio that the hypermetropia decreases.

It seems to me that these 2,092 meridians examined serve to show conclusively that the radius of corneal curvature has a very marked influence on the refraction of the eye. I can understand how a great many cases of axial myopia that have reached a high degree of progression would upset such relations as shown in my table, but fortunately for my conclusions, we do not see very many such cases in our western country.

I regret that my table of statistics is not larger, and that I did not begin making record of the radius of the corneal curvature more than two years ago. I hope at some future time to report further on this subject.

DISCUSSION

ON PAPERS OF DRS. CLAIBORNE AND BLACK.

DR. O. A. GRIFFIN, Ann Arbor—I would add a word in explanation of why the realms of hyperopic and myopic astigmatism are quite constant. In my opinion, this is due to the fact that the shortest diameter of the orbital cavity is usually placed vertically, which would tend to make the vertical curvature of the cornea greater than that of the horizontal. This tendency is augmented by the constant pressure of the lids on the upper and lower margins of the cornea. If the orbital axis and palpebral aperture are placed obliquely, the pressure on the cornea will be correspondingly exerted with a resulting obliquity in the axis of astigatism; but, inasmuch as this is not the rule, the axes are usually symmetrical and the vertical curvature of the cornea is greatest. Not infrequently asymmetry of the axes obtains its origin in asymmetry of the lenticular curvatures, as is shown by the fact that the axis as determined subjectively does not correspond to the ophthalmometric findings. That the axis of astigmatism is not constant should be remembered in ordering correcting glasses, especially when the axes are oblique and a subsequent check test is not made after a cycloplegic determination of the refraction which, in many instances, reveals a wholly different position of the axis. These changes may be due to a false position of the lens, produced by paralysis of the ciliary muscle or action of the obliques. In the latter instance change of axis is usually observed in those cases in which the axes are slightly inclined from the vertical or horizontal positions, when there is an effort on the part of the oblique muscles to make the axes correspond in each eye, thus finally producing hypertrophy of the acting muscle or insufficiency of its opponent. With constant use of correcting glasses, the hypertrophy diminishes with a subsequent change in the axis of astigmatism—thus illustrating the importance of always determining the condition of the ocular muscles and its effect on the refractive condition before prescribing glasses.

DR. A. G. BENNETT, Buffalo, N. Y.—I agree with Dr. Claiborne that there is a realm of predilection for the axis to fall in, but I think it must be taken with reservation because age has considerable effect. In a study I made last year of 7,665 eyes I took my cases and divided them into decades. I spoke of the axes as falling in the meridian of greatest refraction. I found that in the first decade it occurred in nearly 90 per cent. in what I called the vertical region, which takes in 25 degrees on each side of the absolute vertical. In the first decade nearly 90 per cent. were in this region and 4 per cent. only in the horizontal. In the next decade, from ten to twenty, the vertical axis prevailed in 77 per cent.; in the next, from twenty to thirty, in 75 per cent.; from forty to fifty, 54 per cent.; after the patients reach fifty the axis will not occur in the vertical region half the time; it is about 37 per cent. When over seventy I found only 29 per cent. vertical. This is true within certain limitations of myopia, but I do not find variations so pronounced as in hypermetropia.

DR. G. C. HARLAN, Philadelphia—With reference to the relation of the axes in the two eyes: A few years ago I had 500 cases collated from the Wills Hospital records and in 70 per cent. the axes were exactly symmetrical, and in 78 per cent. within ten degrees of exact symmetry.

DR. J. L. BORSCH, Philadelphia—I would like to ask Dr. Black to explain his modification of the Placido disc. I have been using the de Wecker keratometer and will briefly describe it, as it is the most accurate, simple and rapid means of ascertaining astigmatism, besides having the advantage of being very inexpensive, costing from $12 to $14. It consists of a black disc with a central perforation; on one side of the instrument are white strips that form a perfect square when the pointer indicates zero. These strips are so arranged as to overlap and are movable; on the other side is a register marked from 0 to 18 diopters and a pointer attached to a screw which moves the white strips. Around the central perforation in the disc is a brass circle marked in degrees from 0 to 180, and on the plate an arrow to indicate the axis of astigmatism. The disc is held in one hand at 30 cm. from the patient's face and he is asked to look into the perforation with one eye, the other being covered with the hand. The observer on looking at the patient's cornea through the perforation will see an image of the white strips; if they form a perfect square there is no astigmatism; if they form an oblong—turn the instrument 90 degrees—turn the screw until the strips form a perfect square and then read off the amount of astigmatism, the degree and axis.

DR. J. H. CLAIBORNE—My modification of Placido's disc is represented in one of the pictures. You simply observe whether the picture is round or oblong. The instrument which I show here is practically the same thing. I have termed these positions of preference. I judge about where it is by means of the reflection. The ophthalmometer is not an accurate instrument; it often misses the axis by 15 degrees, especially where the astigmatism is oblique. With this instrument and a convex lens I can tell the astigmatism within three-quarters of a diopter. That is the result of ten years' constant practice with the instrument. I think I have a little facility in the examination of refraction; I have this because I bear these outlines in mind. After using skiascopy and the ophthalmometer, I put the cylinder at the first position of preference and then in a few minutes, if necessary, run up all these axes. It follows the rules which I evolved about ten or twelve years ago and have proved to my satisfaction. Dr. Griffin says that after the mydriatic the axis may be different; of course, but the subjective post-mydriatic test is the final test in all these cases. Concerning the axes of neutrality I think there are axes within that are that are chosen. I would like to have the section observe these things. My 1,200 cases proved it to me conclusively and I would like to have the corroboration of the members of the section. I am sure they are largely true, if not in the exact percentage I have found.

THE MECHANICAL TREATMENT OF HIP DISEASE.*

ADOLPH LORENZ, M.D.

VIENNA, AUSTRIA.

Gentlemen:—Your friendly greeting reminds me of the splendid time which it was permitted me to spend in your great, free country. As that period was the most beautiful in my whole life, I naturally am glad to be reminded thereof, and, before everything else, let me thank you for having brought to my memory those reminiscences of America. Indeed, as I look over this meeting I can once more feel myself back in that time when I was permitted to describe and demonstrate my bloodless orthopedic operations to large audiences of my American colleagues. My American brethren were indeed very amiable, but they also let me work very hard. I may say that never in my life have I

* Address delivered before the Anglo-American Medical Association of Vienna, 1904.

labored as in America. It was there that I learned what it meant to lead a "strenuous life."

I have chosen as the subject of my discourse one which will, perhaps, be of especial interest to you, because the views concerning it in America are entirely at variance with our conception of the subject. But I must emphasize that my own point of view in regard to the question of the mechanical treatment of hip disease differs very materially, not only from that held by Americans, but also from that held by many Europeans. I must, therefore, be prepared to be opposed and contradicted by some of my orthopedic colleagues in Europe.

In order to be able to judge of the value of mechanical treatment of hip disease, it is very important, as well as instructive, to take a look at such cases as have never been treated mechanically. Such cases are by no means rare. How often, indeed, is complicated and costly treatment impossible on account of the poverty of the parents, or oftener, on account of the great distance to the place where such treatment is offered. No less frequently does it happen that the parents become wearied of the lengthy treatment and give it up, letting the disease take its own course.

These cases all find their way to the physician in the end; oftenest after the disease has as good as run its course. What is it that impels the patient, or his parents, to seek the physician? It is the contraction deformity, as a rule, the flexion-adduction contraction, the shortened leg that becomes troublesome on account of the impediment to the gait. I must openly admit that to me such patients are not only the most interesting, but also the most desirable. They cause neither worry nor difficulty; they suffer no pain, their treatment is perfectly simple, lasts but a short time, and is usually followed by excellent results.

The intra-articular modeling redressement, a central or a subtrochanteric osteotomy, according to circumstances, corrects the contracted position of the joint and improves the patient's gait, usually to his complete satisfaction. In such cases, therefore, we are not treating tuberculosis of the hip, but rather a condition subsequent thereto, namely, the coxitic contracture. I have followed, with greatest interest, those cases in which the course of the disease was not influenced by any physician's mechanical intervention.

The history of one of these cases is about as follows: Many months, perhaps one or two years, before the first onset of the disease, the child limps slightly for a time. Motion in one leg is guarded during walking, lameness appears soon after, or, indeed, it is often apparent toward evening, when the child had previously been quite active. The next morning no trace of lameness is to be noted. After such an attack of limping, there often ensues a period of quiescence, which may be of several months' duration. Then limping once more comes on, to again disappear. One might get the impression that a trick of the child was at the bottom of this temporary lameness.

The lay expression, "voluntary limp," seems to have its origin in this idea. We know that there is nothing more involuntary, that there can be no more absolute constraint than the limp of beginning coxitis. After a whole series of such periods of limping (coxitic attacks), lameness finally becomes permanent. At the same time, it is only rarely that the child manifests pain in the hip or knee. As a rule, the child is active during the day, and sleeps well at night. Gradually, however, the picture changes, the child becomes more careful in its movements, it runs and jumps about less, but can still walk without pain. After greater exertion, pain, which passes away, however, asserts itself, especially in the knee. For a long time the knee is considered the diseased part. By and by sleep becomes restless; the child cries out at times, hardly awaking, however, and if asked why it cries it can not give a definite answer. During the day the child is comparatively or perhaps completely quiet. Gradually the nights become worse, the child awakes screaming, cries for awhile, and then falls asleep only to awaken again with a cry. The following morning the child is comparatively lively, has no pain, and runs about, perhaps limping a little. Toward the end, the child screams more than it sleeps during the night, and is not entirely free from pain during the day, but still manages to hobble about.

After many months, the little patient finally is forced to remain in bed because he can no longer use the diseased leg. During several weeks the child endures severe pain by day and still more by night. At last, however, the condition improves. The child asks to leave the bed, and again begins to get about with the aid of a cane or crutch. In time the pain departs and the child is lively again. During the course of the disease a swelling might have been noticed, which sooner or later opened and discharged pus, or the region about the joint may never have shown any swelling or pus formation. Finally, the crutch is discarded, and the child once more learns to walk fairly well, usually treading on the front part of the foot. The period during which the child can not walk at all lasts from several months to a year, according to the nature of the case, but seldom lasts more than one year. Some exceptional cases never leave off walking at all.

Such is the history of an untreated case. On examination one finds the leg in marked flexion, adduction-contracture; at times the joint is ankylotic. Perhaps scars of sinuses or discharging sinuses are present; perhaps there has been no pus formation. It seems a certainty, to me, that cases, untreated as they are, do not arrive at abscess formation any oftener than those treated mechanically.

So far as the existing contracture is concerned, the capacity for walking remains; the firmer the contracture the better the endurance in walking. The bones are firm and capable of bearing weight; the muscles of the limb are comparatively well developed.

Thus, you see, apart from the contracture, the result of a case, thus spontaneously cured by Nature, is not a poor one. In fact, I believe it is a good one. It is true, moreover, that these never-treated children attain an independent, enduring gait more quickly than the mechanically treated coxitic patients. This is not to be wondered at when we consider the manner in which the strictly mechanical treatment is carried out.

A great number of physicians—and to these belong most of my American colleagues—consider it absolutely necessary to confine coxitic patients to bed for more or less time, and there to carry out the treatment by extension. Such bed treatment is protracted for a number of months or even years. Not until the more alarming manifestations have disappeared are the children permitted to get up. They then get an extension apparatus which fixes the joint and which takes the weight of the body off the hip joint.

Other physicians—to this class belong foremost the English physicians who came under the influence of

Thomas of Liverpool—do not consider extension necessary, but content themselves with removing the weight of the body. However, they hold the same views as the Americans in regard to bed treatment, systematically conducted. A third group of physicians—to this belong the Germans—lay no great stress on bed treatment, but are, for the most part, believers in the ambulatory treatment. In order to carry this out there is applied to the diseased leg, from the pelvis to the sole of the foot, a closely fitting apparatus, precisely constructed, which fixes the joint in the correct position, thereby holding it extended and excluding every contact between foot and floor. Provided with such an apparatus, the sick children may enjoy fresh air and sunlight, and are able to move about fairly well without suffering pain. They are rescued from the confinement to bed and the sick room, which, in itself, is always damaging to health. For the limb, the apparatus is preferable to bed treatment, while the whole organism has the benefit of light, sun and motion, and thus conditions are offered for better nourishment.

Opinions are at variance as to whether extension is absolutely necessary to keep the leg as quiet as possible or whether simple fixation is sufficient. The Americans, and the Germans no less, swear by extension; the English have almost entirely abandoned extension and carry out the treatment of coxitis by fixation alone.

My standpoint in this question is that extension is useful to a certain degree, but is in no case necessary. At any rate, the mechanical treatment of coxitis is extraordinarily simplified by omitting extension. In the last ten years I have used extension practically not at all.

Before describing my treatment I will try to delineate an average case of coxitis which, having been seen at the very beginning of the symptoms, has been treated in the most careful way by all the expedients of mechanical therapy.

Let us assume, for example, that the child in question had been treated from the start by extension in bed for a considerable period which fixed the joint, not only taking the weight off the leg, but also extending the limb and which was worn day and night; say that this treatment has been carried out for all the years which the disease lasted.

We will assume, for the sake of simplicity, that the case was a mild one and that no pus formation had taken place. The pains were slight all through; night cries occurred, to be sure, but they were never bothersome. The child could always move about, with the exception, perhaps, of a longer or shorter period of especial sensitiveness. Accordingly there can be no doubt that this strict mechanical treatment has materially influenced the course of the wearisome disease. Now, to continue with this case, let us remove the "Hülsen-Apparat" and examine the position of the joint and the condition of the leg.

We probably find the joint in good position; perhaps there exists a very slight degree of adduction and flexion, or the joint has an apparent tendency to assume this position after the apparatus is removed. The joint is movable within a very small arc; there is always more or less shortening. On the whole the result of the examination of the joint is favorable.

Now let us look at the leg itself, and we will find it very much emaciated; the muscles flabby and without power; the knee joint has become lax under the long-continued influence of extension. The whole leg appears as a loose wobbling appendage of the trunk. Experience shows that the bones of such a leg are brittle and fragile. If we investigate the independent function of such a leg, there is shown an absolute inability to support, unaided, the weight of the body even for a moment.

This unfitness for function is not caused by pain, but is due to the extreme atrophy of the muscles and bones. Without the apparatus the patient is absolutely unable to walk even one step. He has become a slave to his machine or his crutches. This state of affairs after a while becomes unbearable to the patient. Finally he rids himself of the machine and is satisfied if he is able to walk independently; whether it be poorly or well; if he only does not have to resort to "his machine" again. Should such a patient have learned to emancipate himself from his "Hülsen-Apparat," then in nine out of ten cases an adduction contracture will have supervened in the course of a short time. I will even go so far as to state that this contracture must follow for obvious reasons, unless the patient takes special precautions against it.

If we now compare the two cases, the one which had no mechanical treatment and the other which was treated by the most careful mechanical method, we are forced to acknowledge that, in the latter case, the end result of our efforts of years is disproportionately small. The only noticeable advantage of this strict mechanical treatment is probably a diminution of the coxitic pain. But this is counterbalanced by the great discomfort occasioned the patient by a narrow, tightly fitting apparatus.

The course of the disease is not shortened by the strictest mechanical treatment, the frequency of abscess formation is hardly lessened, whereas the leg will unquestionably remain unfit for independent functional use for a much longer time than if the mechanical treatment had never been used at all. Another so-called advantage is the good position obtained, but this prevails only so long as the apparatus is worn. Let the patient discard the same and he will not often escape the resulting contracture caused by the walking. The advantages thus gained, therefore, are certainly problematic.

The disadvantages which go hand in hand with this extension treatment are very real. The shortening due to lack of growth must necessarily be greater, as the limb is excluded from motion for years. For the same reason the bones will be more brittle and incapable of weight-bearing than if no treatment had been carried out. The muscles of the whole limb are completely atrophied and functionally powerless. Moreover, the knee joint, which had no share in the disease, has suffered from the strict mechanical treatment; it has become loose and unstable and too weak for any function. These consequences, following strict mechanical fixation and extension treatment, arise from the fact that the limb has continually been restrained from use for a period of years. The child is almost in the position of one whose leg is altogether wanting as a result of an amputation at the hip joint.

Absolute functional restraint, continued for many years, is bound to be avenged and does the limb more harm than the disease of the hip joint itself. If, therefore, one compares the two cases referred to above, the one never treated mechanically and the other treated mechanically, in the most painstaking way, it is manifest that the first patient got off better than the latter. Perhaps the first patient has suffered a little more pain, but he has regained the independent use of his limb more rapidly. My view as to the mechanical treatment is that it does too much; it goes too far; it is an overtreatment, which, beside its few advantages, also entails unnecessary damages. No one can criticize the mechanical

treatment because it has little effect on local tuberculosis. To cure tuberculosis we will require a serum, which up to the present has not been obtained. But we have a right to demand from mechanical treatment that it allow the general health to be bettered in order to influence the tuberculosis in an indirect way. Beside this we may also demand that the capacity for active locomotion on the part of the patient be guaranteed without the aforementioned after effects of mechanical overtreatment. Any one who has watched coxitis cases which have healed without the intervention of a physician, must finally arrive at these conclusions. From my observation of Nature I have formed my own mechanical treatment. This observation of Nature shows that the diseased joint is sensitive to weight bearing only during a relatively short period of time. During the far greater part of the disease the joint is practically not sensitive to weight bearing. Observation of Nature shows further that the diseased hip joint is extraordinarily sensitive to motion for nearly the entire duration of the disease. Every case not treated mechanically offers evidence for this assertion.

On this observation, my simple mechanical treatment is founded. This consists in obtaining the greatest possible security against movement in the joint, that is, the best possible fixation. I apply no extension, but in extreme cases use suspension for the time being. In most cases it is sufficient to protect a leg, which is sensitive on bearing weight from the shock of the weight. The object of this "physiologic mechanical treatment" is that the diseased joint is sufficiently protected without excluding from function the rest of the limb, which is otherwise healthy. On the contrary, the limb should fulfill the function of weight bearing during the whole course of the disease, regulated according to the amount of sensitiveness at any given time.

The physiologic mechanical treatment consists, in short, of the following measures. During the abduction period of the disease the joint is slightly or not at all sensitive against pressure. Therefore, during this stage, which lasts many months, perhaps a year or more, I simply fix the joint in its pathologic position by applying a firm plaster dressing which is renewed every three or four months. The knee joint remains free and the lower part of the leg is accessible to massage. The skin may be kept clean and healthy by means of a scratching band under the plaster. This fixation protects the joint against motion, especially at night, when the reflex muscle spasm is lessened. During weight bearing the pain is relieved. On the healthy side the shoe is raised to equalize the abduction lengthening. A plaster cast fulfills the purpose of rigid fixation better than a removable "Hülsen-Apparat," made of leather, because the elasticity of the latter allows the joint too much excursion.

With a cast of this sort the child goes about as long as treading on the limb is painless. If walking causes pain I fasten a leather splint to the lower end of the plaster which embraces the leg and foot and which is jointed at the knee and ankle. Thus in walking, the jar is intercepted by the steel sole piece of this lower leg splint, and is transferred to the apparatus, diminishing to such an extent that no pain is brought about. In cases where great sensitiveness prevails, the steel sole is placed somewhat lower so that the leg is in suspension in the apparatus. Extension is superfluous. As soon as the sensitiveness to weight bearing ceases I give the lower leg its freedom again. In place of the plaster cast, a removable leather splint is applied which embraces pelvis and thigh. One may now begin with massage of the thigh and commence active abductive movements, always with caution, however. It goes without saying that no pain should be caused by these attempts to regenerate the pelvic trochanteric muscles. The exercises used in after treatment should confine themselves to active and passive abduction movements and to passive extension of the joint.

This set of gymnastics is for the purpose of counteracting the flexion-adduction contracture and to give the joint the position of extension as in standing; I call this position *"indifferente streckstellung."*

The joint is never moved in the sense of flexion, or in any other direction than mentioned above; no advantage is given the patient by a very movable joint. Our everyday experience shows that the looser and more movable a healed coxitis joint is, the worse it functionates. Exhaustion quickly supervenes which is augmented to actual pain, loose joints are easily traumatized and readily subject to accidental violence.

Seeing that the bones constituting the hip joint have usually undergone anatomic changes, and that the muscles about the joint are usually insufficient and powerless to properly support the affected joint, it is my opinion that the goal to be striven for in the treatment of coxitis is the position of "indifferent extension," with as much rigidity in the joint as possible, in other words, bony ankylosis of the hip in the indifferent position.

Bony ankylosis is not subject to traumatization, muscular insufficiency is harmless because muscular power is no more required and the danger of the "flexion-adduction" contracture is past.

Patients with such a result of treatment hardly limp at all and are not easily tired.

It is not in our power to modify the course of a case of coxitis that we may be sure to obtain bony ankylosis.

As it was not my place to talk of the operative treatment of hip disease, I have chosen for example cases without pus formation, and ones which could never have offered an indication for operative interference.

CONCLUSIONS.

In conclusion I wish to review in a few words the principles of the physiologic mechanical treatment of coxitis.

Knowing that mechanical treatment is unable to attack the disease (tuberculosis) itself, it must be constituted so that it is ambulatory, so that it allows of a certain freedom of locomotion and the enjoyment of fresh air, thus improving the general health of the patient. This mechanical treatment should not degenerate into an overtreatment, and must not lead to the result that the remaining healthy portion of the leg becomes withered and incapacitated for function.

I call the above described manner and means of treatment the physiologic one because it permits the physiologic function of the leg.

I believe I may assume that you, my honored colleagues, will take great interest in this, my conception of the principles of the rational treatment of coxitis, as these principles differ essentially from those generally accepted in your country. I can recommend my method of treatment, as it is much simpler than all others, and can be used by every physician in the land.

Perhaps I may offer as further recommendation that in fifteen years' experience this treatment has proved itself the best. I believe the simplicity of the method will find favor in the eyes of the practical Americans, and I would consider myself fortunate if I dared to hope to see my views planted in American soil by one or another of my honored colleagues.

THE MANAGEMENT OF PRISON TUBERCULOSIS,

WITH THE AID OF TUBERCULIN AS A DIAGNOSTIC AGENT.*

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The object of this paper is not to give any new facts in regard to tuberculosis or the use of tuberculin, but merely to give the methods used and results obtained in an attempt to combat the spread of tuberculosis from one point of this many-sided question, and in the hope that the suggestions here given will lead to similar work in other institutions of the kind. The question is not one that concerns the welfare of the inmates only, but the community at large. Men who are perfectly well, on entering these institutions, run a greater risk of contracting the diseases than if they remained out, and on leaving the institution a few years later become additional foci of contagion in other communities.

The following work was carried out in the Indiana Reformatory by Dr. H. C. Sharp, physician and surgeon in charge, and myself, during the summer of 1903. The reformatory, which is practically a penitentiary, averages about 950 male inmates of ages varying from 17 to 35 years, whose sentences are from one to twenty-one years. Those inmates who are not employed in the services of the reformatory are contracted out to several manufacturers whose plants are within the walls.

Tuberculosis has always been the chief cause of sickness and death in the institution, the form in which the disease most often manifests itself being the pulmonary and glandular type. In many of these cases the diagnosis of tuberculosis was evident, but in a large group of men who complained of cough, expectoration, pains in the chest, gastrointestinal disturbances, weakness, etc., a positive diagnosis was difficult to obtain.

The problem before us was: 1, To diagnose every case of tuberculosis; 2, to separate the tubercular from the non-tubercular, and to take every precaution for the prevention of the spread of the disease; 3, to give those suffering from the disease the best treatment available.

In order to obtain a diagnosis in all cases, it was necessary for every man in the institution to receive a physical examination, and the first question to arise was in regard to the examination of the sputum for the tubercle bacilli. If this were carried out it would mean a task too great for practical purposes, and moreover, a certain number of very early cases might be overlooked in which tubercular sputa had not begun to appear, and also in cases where tuberculosis existed in other parts of the body. Therefore, we made no routine sputum examinations, but relied altogether on the administration of tuberculin to give the diagnosis in all doubtful cases. Many cases definitely tubercular, who were not running an elevated temperature, were given tuberculin in order to corroborate our results.

To begin with, every man in the institution was examined as follows: He was asked how he was feeling at the present time and when he was sick last. The following questions referred to the past as well as the present regarding pain, pain in the chest, cough, expectoration, bloody expectoration, hemorrhages, night sweats, loss of weight and strength, pain in stomach, indigestion and condition of bowels. He was stripped to the waist and examined for enlarged glands, symmetry and expansion of chest, vocal fremitus, percussion and auscultation over the apex, back and front of chest. If any of the above symptoms were present, or if any one sign of pulmonary disease was found, no matter how slight, such as change in pitch or quality of note, harsh breath sounds, râles or prolonged expiration, the man was put on the list to receive the tuberculin test, and notes were kept as to the conditions found. In taking the above history the question of sputum was found to be very unsatisfactory. In this part of the country almost everyone suffers more or less with naso-pharyngeal catarrh, and the average man found difficulty in telling whether it came from his lungs or his pharynx. As the great majority of men examined gave a history of expectoration, the above was not

GROUP 1.

Those giving symptoms pointing to pulmonary tuberculosis but no signs.

Number of Convict.	Pain in Chest.	Cough.	Bloody Expectoration.	Night Sweats.	Loss of Weight.	Chronic Indigestion.	Miscellaneous Symptoms.	Temperature of Reaction.	Maximum temp. Hrs. after Injec.
3819	+	+	. . .	. . .	. . .	+	Constant Headache.	103.2	6
3516	. . .	+	. . .	. . .	+	+	. . . . .	104	10
2031	+	+	. . .	+	. . .	+	. . . . .	102	5
4060	. . .	. . .	+	. . .	. . .	. . .	. . . . .	100.2*	9
3687	+	. . .	. . .	. . .	+	. . .	. . . . .	102.2	13
3610	. . .	+	+	. . .	. . .	. . .	. . . . .	101.2	11
3801	+	+	+	. . .	. . .	. . .	. . . . .	101.2	9
3876	. . .	. . .	+	. . .	. . .	. . .	. . . . .	101	8
2 55	+	+	+	. . .	. . .	+	. . . . .	101.2	10
3860	+	. . .	+	. . .	. . .	+	. . . . .	101	8
3423	+	. . .	+	. . .	. . .	. . .	. . . . .	102	5
4199	+	. . .	. . .	. . .	. . .	. . .	. . . . .	103	6
3500	+	+	+	. . .	. . .	. . .	. . . . .	101.4	8
3913	+	. . .	+	. . .	. . .	. . .	. . . . .	101.4	8
3432	+	. . .	+	. . .	. . .	. . .	. . . . .	102.2	9
2910	+	+	+	. . .	. . .	. . .	. . . . .	102.2	6
3642	+	+	+	. . .	+	. . .	. . . . .	103.4	13
3455	+	. . .	+	+	+	+	. . . . .	102.3	20
4076	+	+	+	. . .	. . .	. . .	. . . . .	102.1	6
3778	. . .	+	+	+	. . .	. . .	. . . . .	102.4	3
3949	+	+	+	+	. . .	. . .	. . . . .	101	6
4169	. . .	+	+	. . .	. . .	. . .	. . . . .	101	5
3465	+	+	. . .	. . .	. . .	+	Chronic Diarrhea.	101	16
2929	. . .	. . .	+	. . .	. . .	+	Chronic Diarrhea.	100 *	7
3258	+	+	+	. . .	+	. . .	. . . . .	100.4	9
4098	. . .	. . .	+	+	. . .	. . .	. . . . .	101.2	9
3525	. . .	+	+	+	. . .	. . .	Chronic Diarrhea.	101.4	9
3356	. . .	+	. . .	. . .	. . .	. . .	. . . . .	101.2	17
3735	. . .	+	. . .	. . .	. . .	. . .	. . . . .	100.4	13
3920	. . .	. . .	+	. . .	. . .	. . .	. . . . .	100 *	13
3979	. . .	+	. . .	. . .	. . .	. . .	. . . . .	100.4	9
3544	. . .	+	. . .	+	. . .	. . .	. . . . .	102.2	11
3286	. . .	+	. . .	. . .	. . .	. . .	. . . . .	100.4	12
3878	+	+	. . .	+	. . .	+	. . . . .	101	18
4138	+	. . .	. . .	+	. . .	. . .	. . . . .	103.4	17
3429	. . .	. . .	+	. . .	. . .	. . .	. . . . .	102.8	20
4176	+	+	. . .	+	. . .	+	. . . . .	102.4	17
4030	+	+	+	. . .	+	. . .	. . . . .	103.4	11
3347	+	+	+	. . .	. . .	. . .	. . . . .	101.4	10
4215	Had hemorrhage 3 years ago.						No symptoms at present.	102.4	10
1738	. . .	. . .	+	. . .	+	. . .	. . . . .	103	19
4009	+	+	. . .	+	. . .	+	. . . . .	103	13
3240	+	+	. . .	. . .	. . .	. . .	. . . . .	101.2	15
4007	. . .	+	+	. . .	. . .	. . .	. . . . .	101	13
4051	. . .	+	+	+	+	. . .	. . . . .	102	14
4078	. . .	+	+	+	+	. . .	. . . . .	100.4	11
3522	. . .	+	+	. . .	. . .	+	. . . . .	101.2	13
2878	+	. . .	+	. . .	. . .	. . .	. . . . .	101.4	13
3705	. . .	+	+	. . .	. . .	. . .	. . . . .	102.4	17
3666	+	+	+	. . .	. . .	. . .	. . . . .	101.2	17
3883	+	+	. . .	+	+	+	. . . . .	103.6	12
2807	. . .	+	. . .	. . .	. . .	. . .	Had measles 4 months ago.	102	15
3184	+	. . .	. . .	. . .	. . .	. . .	. . . . .	104	18
3247	+	+	. . .	+	. . .	. . .	. . . . .	105	9
3921	+	. . .	. . .	. . .	. . .	. . .	. . . . .	101.2	13
3260	+	. . .	. . .	. . .	. . .	. . .	Very weak . . .	101	10
3933	. . .	+	+	. . .	. . .	. . .	. . . . .	101.2	10
3338	. . .	+	+	. . .	. . .	. . .	. . . . .	100.2*	14
3541	+	+	. . .	. . .	+	. . .	. . . . .	100 *	7
59	33	41	36	15	11	13	. . . . .	Total	. . .

*Temp. had been subnormal so that the rise obtained was over 2° associated with febrile symptoms.

* Under the direction of H. C. Sharp, physician and surgeon of Indiana Reformatory.

taken into consideration unless it had at some time been bloody.

Before starting the tuberculin test it was thought best to experiment with the dosage. The dose for diagnostic purposes was from 5 to 10 milligrams.[1] The larger dose was first tried, diluted in 1 c.c. of water, on a patient with definite tubercular adenitis, and for a control test another man, who was apparently perfectly healthy, was chosen to receive the administration at the same time. The former gave a typical tuberculin reaction with a rise of temperature of 104 degrees, while the latter felt perfectly well and his temperature remained normal. Other tubercular patients were tested with smaller doses of tuberculin, but the reaction was not so definite as when the 10-milligram dose was given; therefore, this maximum dose was employed throughout the series of tests.

In giving the tuberculin test nineteen men were tested at a time. They were taken into the hospital and a one hour temperature record was taken for about 36 hours so that a morning and evening temperature could be recorded. If any of the men were running an elevated temperature the test had to be postponed until it became normal, the tuberculin reaction being valueless unless given during a period of apyrexia. After the temperature record had been taken for the proper length of time 10 milligrams of tuberculin diluted with 1 c.c. of distilled water was injected deep into the left deltoid, the skin having been previously washed with soap and water, ether and alcohol. The injection was made at midnight so that the reaction could be watched on the following day.

GROUP 2.

Those giving both symptoms and signs suggestive of pulmonary tuberculosis.

Number of Convict.	Pain in Chest.	Cough.	Bloody Expectoration.	Night Sweats.	Loss of Weight.	Chronic Indigestion.	Miscellaneous Symptoms.	Percussion.	Auscultation.	Miscellaneous Signs.	Temp. of Reaction.	Maximum Temperature hrs. after Injec.
2609	+	+	Vom. Bl'od	+	. . .	+	. . . . .	Dull right apex.	Harsh breathing over both apices	. . . . .	103	8
3908	+	+	. . .	+	. . .	. . .	. . . . .	Right front higher pitch.	. . . . .	. . . . .	100.2	3
1529	+	. . .	*	. . .	. . .	. . .	*Had one hemorrhage.	Dull left apex.	. . . . .	. . . . .	104	15
3832	+	+	+	. . .	+	. . .	. . . . .	. . . . .	Harsh breath sounds over both lungs.	. . . . .	102.4	12
3988	. . .	No symptoms.		. . .	. . .	. . .	. . . . .	. . . . .	Rough breath sounds over right apex.	. . . . .	101.2	17
3894	. . .	+	+	. . .	. . .	+	. . . . .	Dull right apex.	Sibilant râles over both lungs. .	. . . . .	103.2	14
3194	+	. . .	. . .	. . .	. . .	. . .	. . . . .	. . . . .	Sibilant râles over both lungs . .	. . . . .	100.2	19
2137	No pulmonary symptoms.			+	+	. . .	. . . . .	Dull right apex and upper left lung.	Breath sounds harsh over dull area.	. . . . .	104.4	14
3435	+	. . .	. . .	. . .	. . .	. . .	. . . . .	Higher pitch over left apex.	Sibilant râles over left apex. . .	. . . . .	104.2	16
2934	+	+	. . .	. . .	. . .	+	. . . . .	Dull area over left side.	. . . . .	. . . . .	103.4	14
2966	+	+	+	+	+	+	Very weak	Left apex higher pitch..	Harsh breath sounds over left apex and side.	Vocal fremitus mr. on lt. side	102	16
4225	. . .	No symptoms.		. . .	. . .	. . .	. . . . .	Higher pitch over left apex and side.	. . . . .	. . . . .	101.4	5
3744	+	+	. . .	. . .	. . .	. . .	. . . . .	. . . . .	Harsh breath sounds and sibilant râles over both lungs.	. . . . .	101.2	7
3099	+	. . .	+	. . .	. . .	. . .	. . . . .	. . . . .	Harsh breath sounds, both apices	. . . . .	102.6	18
4139	No pulmonary symptoms.			+	+	+	. . . . .	Right apex higher pitch.	Tubular breathing over right apex.	. . . . .	102.4	11
3325	. . .	+	+	+	. . .	. . .	. . . . .	Dull over right side . . .	Harsh breath sounds over right side and apex.	Dim. exp. of right side.	105.2	14
	Had right-sided pleurisy 1 year ago.						Recovered.					
2364	. . .	+	+	. . .	. . .	+	Chronic diarrhea.	. . . . .	Harsh breathing over both apices	. . . . .	100.4	17
3981	+	. . .	. . .	. . .	. . .	. . .	C'nstipation alternating with diarr.	Higher pitch over right apex.	Harsh breathing over right apex. Sibilant râles over both lungs.	. . . . .	100.4	8
3206	+	+	+	. . .	+	+	Chronic diarrhea.	Abdomen distended and tympanitic; no fluid.	Breath sounds harsh over right apex.	. . . . .	101 2	16
3997	+	+	+	. . .	+	+	. . . . .	Left lung and apex higher pitch.	. . . . .	. . . . .	104.2	2
3776	+	. .	. . .	. . .	+	+	. . . . .	. . . . .	Expiration prolonged over left apex and side.	. . . . .	101.4	15
3631	+	+	+	. . .	. . .	+	. . . . .	. . . . .	Harsh breath sounds over left lung.	. . . . .	102	20
2234	+	+	. .	. . .	. . .	. . .	. . . . .	Higher pitched over right side.	Enfeebled breath sounds over right side.	Sl. frictions rub at base.	102.2	13
3756	+ in both sides for last 5 months; weak and anemic.							June 12, '03, acute pain at base of both lungs. Friction rub at both bases that lasted for a week. August 3, '03, pain continued, rub heard, tubercular reaction 105.4 13 hours after injection (delirious). Next day pain not so severe. September 19, '03, very little pain since day of reaction; returns occasionally and is slight. Patient good color and says that he feels O K. Fine friction rub at lower right base.				

Out of the 965 men in the institution who received a physical examination, 24 were found to be definitely tubercular and were not tested with tuberculin. Two hundred and seventy-eight men gave either one or many of the symptoms or signs of tubercular disease and received an injection. Of course, all of these were not thought to be tubercular, but by testing every suggestive case, no matter how slight his symptoms or signs, seemed to be the only sure way of picking out every case of tuberculosis. Out of this total number tested, 102 gave a definite tuberculin reaction, a definite reaction consisting in a rise of temperature two degrees above the maximum temperature previously recorded,

1. The product used was the Mulford tuberculin. (It is necessary to mention this, as the dose varies greatly with the product used.)

accompanied with at least one febrile symptom, such as chill, headache, pain in back, etc.

These 102 men who gave a positive reaction may be divided into the following groups:

Group 1.—Those giving symptoms of pulmonary tuberculosis, but in whom no physical signs could be obtained after repeated examinations made before, during and after the tuberculin reaction.

Group 2.—Those giving both symptoms and signs of pulmonary tuberculosis.

Group 3.—Those without symptoms and whose only sign was enlarged glands.

Group 4.—Miscellaneous cases.

In this first group of 59 cases, 41 gave a history of cough, 36 gave a history of the sputum being bloody or blood tinged at one time or another, 33 of pains in some part of the chest, 15 of night sweats, 13 of chronic gastrointestinal disturbances and 11 gave a history of loss of weight.

It will be noticed that several of the maximum temperatures recorded are only between 100 degrees and 101 degrees, and the objection might be raised that this elevation is not sufficient to contribute a definite tuberculin reaction. It was a curious fact that the great majority of the men ran a temperature of about 1 degree below normal, for which we could find no explanation. However, a rise from this subnormal temperature to

GROUP 3.

Those where only signs of tuberculosis was enlarged submaxillary or cervical glands.

Number of Convict.	Local Reaction. Tender and Painful Glands.	Temperature of Reaction.	Maximum Temp. Hours after Injection.
4059	+	164	8
4029	. . . . .	101	6
4004	. . . . .	101	15
3945	. . . . .	102.4	11
2451	+	103	15
3474	. . . . .	102.6	11
2024	+	105	11
4246	. . . . .	101	9
3569	. . . . .	104	12
3707	+	104	12

Total, 10.

100 degrees gave the required amount to constitute a reaction. As mentioned above a positive reaction consisted of a rise of temperature 2 degrees above the maximum temperature previously recorded, associated with at least one febrile symptom.

Ten out of the number tested gave a slight rise of temperature, but not enough to constitute a definite reaction. In these a second injection was to be made at a later time, a report of which has not been made.

SUMMARY.

From the above results we feel very strongly that as a diagnostic agent tuberculin is of great value, not only in surgical tuberculosis, but in the early pulmonary form, where the finding of the tubercle bacilli in the sputum is very difficult or even impossible. In none of our cases, whether a positive reaction was obtained or not, did we find any ill effects following the administration of tuberculin, and this corresponds with the results of others, showing that the danger from the use of tuberculin is practically *nil*.

The result of our examination of 965 inmates showed 24 to be in an advanced stage of tubercular disease, and 102 who gave a definite tuberculin reaction, making a total of 126, or nearly 13 per cent.

PROTECTION OF THE NON-TUBERCULAR.

The next question was the protection of the non-tubercular, and the method of treatment of those infected with the disease. In regard to the prophylaxis our plans were as follows: The tubercular were separated from the non-tubercular by giving them a separate cell house and having them eat at separate tables. Receptacles for sputum containing sawdust dampened with a solution of crude carbolic acid, were placed in convenient locations throughout the grounds and shops. The dust about the grounds was done away with by sprinkling once a day. All sweeping in the cell houses and halls was done after first sprinkling sawdust wet with a solution of crude carbolic acid. This gave the whole place a strong odor of carbolic acid, but it is much more agreeable than the musty and dirty odor that formerly prevailed.

TREATMENT OF THE TUBERCULAR.

As to the treatment of the tubercular, those who were able to work were given an occupation suitable to their condition, while those too weak to work were given benches in a sunny part of the grounds where they could sit out of doors all day. All who were able were compelled to take regular exercise. Better food was supplied, and drugs administered such as cod liver oil,

GROUP 4.

Miscellaneous tubercular cases.

Number of Convict.		Temp. of Reaction.	Maximum Temp. Hrs. after Injec.
3094	Complaint: great weakness; no physical signs	102.4	11
3707	Comp.: chronic indigestion; measles 4 months ago	103.4	11
4125	Signs and symptoms of tubercular peritonitis	100.6	10
2993	Signs and symptoms of tubercular peritonitis. Local reaction, abdominal pains and tenderness	102.6	8
3800	Tubercular abscess in muscles of back	104.6	12
3077	Arm amputated 1 year ago for tuberculosis. No local signs or symptoms at present.	103	18
2885	Otitis media	101.6	10
3689	Pott's disease of long standing	102	15
3760	Necrosis of nasal bone with discharging sinus	102	9

9 cases total.

syrup of the iodid of iron and others as the case required.

The therapeutic use of tuberculin has not yet been tried, but as to its value one case is very suggestive. Convict No. 3,756 (see chart of Group 2), who had suffered with bilateral pleurisy with constant and severe pain for two months, on receiving tuberculin, gave a reaction of 105.4. A few days later his pain was very much better, and six weeks later he said that the pains seldom bothered him, and he was feeling better in every way. However, a friction rub still remained.

CONCLUSIONS.

A year has now passed since the above work was done, and while we do not possess accurate statistics as to the number of inmates afflicted with tuberculosis at present in the institution, many facts go to show that there has been a decrease in the disease. During the year ending Aug. 1, 1904, there have been ten deaths from tuberculosis, which contrast favorably with the eighteen deaths that occurred the previous year. After making our tuberculin tests we found that the great majority of men who gave a reaction were those who were constantly coming to morning sick-call. During

the past year the total number of inmates attending sick-call has been 40 per cent. less than the year before.

These few facts are enough to convince us that we are working in the right direction toward the management of prison tuberculosis, and we feel that the results thus far obtained fully repay us for our work.

TONSILLECTOMY, THOROUGH, PAINLESS AND SAFE.*

E. FLETCHER INGALS, M.D.
CHICAGO.

"What is worth doing at all is worth doing well," is a truism especially applicable to surgical procedures, for no operation should ever be undertaken excepting for the patient's best interests. We are all searching, therefore, for something that is better, whether it be new or whether it be simply a modification of the old. That the ancient operation for tonsillectomy is susceptible of improvement goes without saying when we consider some of the important conditions and when we witness some of its lamentable results. An unusual case which recently came under my observation induces me to bring up again this well-worn subject in the belief that there are many surgeons, even among laryngologists, who are not familiar with the technic of an operation that to me appears more thorough and much safer than the methods generally adopted.

The case referred to was that of a gentleman about 30 years of age who had suffered from frequent attacks of severe tonsillitis and in whom both tonsils were enlarged to the size of a small English walnut. From the history there was no doubt of the desirability of removing these glands, but on inspection I discovered on both sides large branches of the carotid artery pulsating at the base of the tonsil immediately beneath the mucous membrane, so that the operation with a tonsillotome, which might have been easily done, would have been attended with great risk; whereas the operation that I have in mind and that I prefer, for nearly all cases, could have been done with safety.

In any case of hypertrophy of the tonsils the questions to be considered are: Is an operation necessary? And, what operation would yield the best results in this particular case, with the minimum amount of danger and discomfort to the patient?

In the great majority of cases in which the tonsil is not larger than an almond, provided it is not subject to frequent acute attacks of inflammation, no operation is desirable; but in many cases tonsils even much smaller than this by reason of acute attacks are a source of danger and of great discomfort to the patient; therefore, their extirpation becomes important. There are some tonsils even larger than this that give the patient no inconvenience and that never will become a source of any considerable danger; but in the majority of cases these hypertrophied glands, because of their liability to infection and acute inflammation, are a constant menace and should, therefore, be removed.

In many cases the so-called submerged or buried tonsil is scarcely perceptible on inspecting the fauces when at rest; but they are rolled out so as to show considerable dimensions with the act of retching. Whether these be small or large, if subject to frequent acute attacks of inflammation, they should be removed.

In children we may reasonably expect hypertrophied tonsils to gradually atrophy and disappear before puberty, but it should be remembered that in the meantime they offer an open portal for the entrance of numerous germs of disease, and in the majority of cases they are associated with hypertrophy of the pharyngeal or Luschka's tonsil, with all its painful results; therefore, when a child has suffered two or three attacks of acute tonsillitis, whatever the size of the glands, it is usually best to advise their removal.

The operation to be selected necessarily depends on various conditions which may be present in individual cases. The old operation performed by seizing the tonsil with a vulsellum forceps and dissecting it out with a bistoury is now seldom employed, but it would undoubtedly yield better results than frequently obtained from some more modern methods. An operation by means of some one of several good tonsillotomes is best in adults, and sometimes also in children in those cases where the tonsil is not adherent to the anterior pillar of the fauces and when it is of such form and in such position that it can be readily engaged and thoroughly removed; in children, in the majority of cases, Luschka's tonsil is also enlarged and should be removed at the same time, which fact may induce us to adopt some other operation. Furthermore, we should not forget that the fright and pain to the little one caused by tonsillectomy is often fully as great as that an adult would suffer from amputation of the arm.

In cases where the tonsil is hidden by the adherent

Fig. 1.—Tonsil separator.

anterior pillar of the fauces, a thorough operation is impossible with the ordinary tonsillotome unless the gland is first lifted out with forceps, and then serious hemorrhage is likely to result either from division of some large blood vessel within the tonsil or from cutting the anterior pillar. In these cases the glands may be cut out with biting forceps, but this operation is peculiarly liable to cause serious bleeding. In such cases we often resort to repeated cauterization, with gradual destruction of the gland rather than incur the dangers of tonsillectomy. Such cauterization, when properly performed and when the gland is not large, usually yields satisfactory results. It has also been recommended to dissect out these glands with the galvano cautery, but the large area that is burned in this operation causes much pain and such extensive cicatrices that this procedure appears to me seldom justifiable.

The operation that I wish to recommend appears to me the best in most cases in children, and in many cases of the so-called buried or submerged tonsil in adults. It was first recommended by me several years ago and has since been adopted by a considerable number of laryngologists, but I fear that the technic is not thoroughly understood by most laryngologists or general surgeons. The instruments required for the operation are a mouth gag, tongue depressor, blunt hook, tonsil forceps, long

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

pincette and two snares with wire. One should also have proper sponges. In most cases one should also have at hand Lowenberg's forceps or some modification of the same for removing the pharyngeal tonsil, or such other instrument as one may prefer for this purpose. I have also for use, when Luschka's tonsil is to be removed, a nasal bone forcep that I pass through the nostril to the nasopharynx for removing pieces of Luschka's tonsil from the vault of the pharynx close to the choanæ, which may be difficult to catch with the instrument in the nasopharynx; and also for the purpose of opening the posterior nares, which will be found considerably contracted in a considerable number of cases. Any good mouth-gag may be used, but I prefer the Allingham, or some of its modifications. Any satisfactory tongue depressor may be employed. I formerly used, for separating the anterior pillar of the fauces from the tonsil, a blunt hook originally designed for a palate retractor, but I have recently had made for this purpose a much better instrument, with two blades, which when closed and locked form a blunt hook. (Fig. 1.) When the catch is loosened the blades may be opened out so that the two ends forming the blunt hook thoroughly separate the anterior pillar of the fauces from the tonsil by a single movement, thus considerably facilitating the operation. The tonsil forceps is an instrument that I had made for this special purpose. (Fig. 2.) It is about eight inches in length, with a catch on the handles so that it can be locked after the tonsil has been seized. The blades of this forceps turn at an angle of 45 degrees to the long axis. They are nearly an inch in breadth at their broadest part and are rounded down toward the end so that when the loop of wire has been slipped over their broadest part it must necessarily slide toward their end to the base of the gland. The end of the blade consists of two blunt points, each about an eighth of an inch in width, separated about three-eighths of an inch from each other by a crescentric depression, which leaves an elliptical opening about three-eighths of an inch long by one-fourth inch in width, when the points of the two blades are brought into contact. At Dr. O. T. Freer's suggestion these forceps are sometimes made with three points at the end of the blade. The instrument is so made that when the handles are locked the points of the blades press firmly against each other, and the handles have enough spring to allow for what we might call the root of the tonsil between the ends of the blades. The pincette is about eight inches in length; it is designed to hold the end of the uvula to prevent it from being caught in the loop of the snare. The snare for removing the tonsil is the same as used for nasal polypi, but I have the handle five inches in length so that it will not be necessary to shorten the wire before the tonsil is cut off. With the snare I use No. 5 steel piano wire. For removing the pharyngeal tonsil I like best John N. Mackenzie's modification of Loewenberg's forceps. The nasal forceps (Fig. 3) are the bone forceps that I have recommended for trimming up spicula of bone in operations on spurs of the septum. I give the patient a general anesthetic and prefer chloroform for children. The patient is placed in the prone position, with the face drawn out over the edge of the table, in which position there is no danger of blood flowing into the trachea. I prefer removing the right tonsil first, the patient being placed, when daylight is used, in front of a window; I seat myself, with my left hand toward the head of the table, on the opposite side of the table from the window, and reflect the light into the throat from a head reflector. After the first tonsil is removed the patient's face is turned toward the window, the face being kept downward during the turning so that no blood runs into the trachea, and the reflector is dispensed with. It is usually more convenient to use artificial light when we have an electric lamp that can be worn on the forehead, but even then I prefer to remove the right tonsil first, because this leaves the patient, when the left tonsil has been removed, in the position with my right hand toward the head of the table, in which I want him for removal of the pharyngeal tonsil.

Fig. 2.—Tonsil forceps.

Fig. 3.—Nasal bone forceps.

TECHNIC OF THE OPERATION.

When anesthesia is nearly complete the patient is placed in the prone position, and the mouth-gag is placed between the jaws on the upper side of the face, and opened as widely as necessary. It is usually found necessary to continue the anesthetic for a few minutes afterward to complete the anesthesia, because these patients do not breathe well on account of the nasopharynx being filled with adenoid growth, and they do not come fully under the anesthetic until the gag is put in to hold the mouth open. For the right tonsil, sitting with my left hand toward the patient's head, I introduce the blunt hook between the anterior pillar of the fauces and the tonsil, while the tongue is kept down by the depressor held in the left hand. I then remove the tongue depressor and open the blades that terminate in the blunt hook widely enough to separate the anterior pillar thoroughly from the tonsil, by which act the tonsil is freed from a considerable part of its bed, so that it may be easily caught by the forceps. In cases where the anterior pillar is not attached to the tonsil this is not necessary, but the gland may be grasped at once with the tonsil forceps. In applying the tonsil forceps it is usually best to have an assistant press the tonsil inward with the fingers applied just back of the angle of the jaw, so as to make the gland as prominent as possible. In seizing the tonsil one should pass the blades of the forceps beyond the anterior pillar; otherwise it is apt to be slightly injured. When the tonsil has been seized the handles of the forceps are locked, the tip of the uvula is then secured with the pincette, which may be held by an assistant, and the loop of the wire of the snare is slipped over the handles and carried along them into the mouth and over the end of the forceps. If the tonsil is of fair size, so that it is held firmly, it may now be drawn on and lifted up so as to make certain that the wire slips under it; otherwise a little care will be necessary to make sure that the wire is beyond the broadest part of the blade, so that when it is tightened it will slide down to the end of the blade and slip under the gland, to cut it off at the lowest point. The wire loop is now drawn

tightly about the base of the tonsil by a moving bar on the handle of the snare; the pincette is then removed and the milled wheel on the handle of the snare is brought into use for the final tightening of the loop. In nearly all cases, if care has been taken in grasping the tonsil, every portion of the gland will be removed at once, and if it has not been necessary to separate the anterior pillar the bleeding will not have exceeded a dram. The patient is then turned so that the face projects over the left edge of the table, the blood is wiped out of the mouth, the left tonsil is caught and extirpated in a similar way; then, if the pharyngeal tonsil is enlarged, it is also thoroughly removed. In the latter case the after-treatment consists of the application through the nares four or five times a day of an antiseptic oily spray or of a 1-4,000 solution of adrenalin chlorid or suprarenalin in a saturated solution of boric acid, and if the child is large enough an antiseptic gargle is used several times daily. When only the faucial tonsils are removed it is desirable to have the throat sprayed or gargled with some non-irritating antiseptic about once an hour for two or three days, and afterward about half as frequently until healing is complete. The child should be kept in the house for nearly a week, for the whole wound can not be expected to heal within less than ten or twelve days.

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DISCUSSION.

DR. G. HUDSON MAKUEN, Philadelphia—Some years ago I saw Dr. Ingals do this operation in his office and was so impressed with the thoroughness of it that I immediately secured the instruments. The first case on which I operated was a child of five years, and I removed the tonsil with great satisfaction, but three or four days later, to my surprise, I found that the child had no uvula. I was interested in hearing that Dr. Ingals has had similar experiences and I should like him to explain how and why these accidents occur.

DR. WILLIAM E. CASSELBERRY, Chicago—In speaking of tonsillectomy before my classes, I divide it into tonsillectomy in children and tonsillectomy in adults. In children I divide again into operations with general anesthesia and those without it. Take first tonsillectomy in children with general anesthesia, I determine whether to use the snare or other instrument, observing whether the tonsil is of the pedunculated or of the submerged type. It is with the pedunculated type that I have found the snare particularly applicable. When they are loose and project well toward the median line, not being tied down to the triangular space, I find very little difficulty in enveloping them with the snare and making the enucleation of the tonsil. The method adopted in such cases on children under general anesthesia is by means of the curved vulsellum forceps, which occupies much less space than the one exhibited. I use No. 7 piano wire because it maintains its resiliency and cuts sufficiently well. The loop is applied to the tonsil and the vulsellum forceps takes it up, the tonsil is drawn into the loop of the snare; the same procedure is then repeated on the opposite side. This operation is usually done in conjunction with the removal of adenoids. In the second type of cases with general anesthesia we more frequently find the flat, adherent or submerged tonsil. I often find it difficult to break up these attachments and for this class of cases I believe the instrument exhibited would work admirably. All the easy cases seem to go to other men, leaving the more difficult cases for those of us who are specialists. They are usually divided into segments, one-half of which is adherent to the anterior pillar and the other to the posterior pillar. I find also that the lobe is higher developed and is covered with muscular tissue. I have not found it wise to use the snare to a great extent in these cases, but prefer to dissect them out. If there is any considerable part that the tonsillotome will take in bulk, I use that first and then supplement it with the forceps in order to make a thorough tonsillectomy.

DR. J. A. STUCKY, Lexington, Ky.—I do not think I have used the guillotine a dozen times in the last three years. I use the snare entirely. I find I can do a cleaner operation in the first place, and that it diminishes the danger of subsequent hemorrhage. There is one difficulty I hope Drs. Ingals and Casselberry will tell us how to overcome; I refer to the necessity for an assistant to hold the tongue down. I find I have trouble in removing the right tonsil, where I have to hold one hand over the other; I need an assistant to hold the tongue down and use the forceps. It is astonishing how dexterity develops in the use of the snare, and after using it a number of times with a heavy wire it will be found much superior to the guillotine or scissors.

DR. GEORGE L. RICHARDS, Fall River, Mass.—I like this method very well, but, except in children, I do my operations without anesthesia. I have done it a number of times by injecting the tonsil with local anesthetics, using the Schleich anesthesia tablet, the operation is practically painless. I use the vulsellum forceps, drawing the tonsil through the loops and maintaining traction as the snare is tightened. The form of tonsil snare with a groove in the side of the ring, in which groove the wire loop is formed, answers admirably. It is somewhat awkward to use, but allows one to exert much firmer pressure against the side of the throat without bending of the wire loop, and is sufficiently powerful for all tonsils. I have found the tonsillar wound to be much more painful and the healing much slower than after operations with the guillotine. This would seem of necessity to be the case, as a wound made with a sharp instrument like the knife will heal quicker and be less sore than one made with a No. 7 or No. 8 piano wire.

DR. GEORGE B. WOOD, Philadelphia—I have had some experience in removing tonsils with a snare, and I want to indorse what Dr. Richards says about the reaction following the operation. I have found it to be almost threefold as great as that following the use of the tonsillotome.

DR. P. S. DONNELLAN, Philadelphia—As my experience with the treatment of enlarged tonsils becomes more extensive, I get more and more away from the use of the guillotine and use the snare or the forceps and scissors. I do not believe that any one operation can be used in every case. I believe the snare operation to be one of the very best.

DR. S. H. LARGE, Cleveland—Two months ago I recorded 100 cases of operations on the nose and throat with ethyl chlorid anesthesia, but the guillotine was used. This method of anesthesia would not do for the snare operation, since the anesthesia would not be sufficiently prolonged. We had no bad results and the patients experienced no unpleasant symptoms in taking it.

DR. E. PYNCHON, Chicago—In my experience the indications for this operation can be classified into, first, those appreciated by the patient, and secondly, those recognized by the physician. The call for operation may be recognized by observing the escape of secretions from the diseased tonsils, or by some condition of the gastrointestinal tract, due to the swallowing of such secretions. The size of the tonsil is no criterion for its removal. I understand Dr. Ingals to advocate the use of a general anesthetic. I think the dangers of anesthesia are sufficiently grave to contraindicate its use except in cases where it is absolutely necessary. If the patient is 13 years old, or older, I invariably use cocain. At this time we are much at sea as to the physiology of the tonsil. I have operated on as many as a thousand cases and never yet have had a patient afterward make any complaint due to the loss of the tonsil. As to the line where the separation from the anterior pillar should be made, I would call attention to the line of demarcation where the redness of the tonsil changes to the pinkness of the pillar: that is my line of separation. As to the method of procedure, I am guided by the age and tolerance of the patient. With small children I do a tonsillotomy. The tendency of the snare is to cut along the line of least resistance and, therefore, the dissection must be made sufficiently deep to leave only a pedicle re-

maining. The greatest disadvantage of the cutting operation in adults is the matter of hemorrhage, and for that reason a bloodless operation is better if it can be done. Dr. Ingals mentions the use of electricity; by the use of the cautery I am frequently able to do a bloodless operation. Dr. Ballinger of Chicago has been using the snare a great deal, and he says that one of the worst hemorrhages he ever had was following the use of the cold snare.

DR. OTTO J. FREER, Chicago—I have done this operation many times and think that it is an ideal method for the removal of the class of tonsils called buried or submerged. It takes these out so cleanly from the very bottom of the tonsillar niche that nothing could be more perfect. It removes projecting hypertrophied tonsils quite as well and in children, where adenoid vegetations are to be cut away simultaneously under an anesthetic, it is the method I prefer to all others, but where projecting tonsils alone need ablation the tonsillotome is preferable. I added the third tooth to the forceps because I found that the two-pronged one slipped off from the tonsil at times. The kind with the third tooth does not let go. I also cut off the uvula once, but since I have used Dr. Ingals' uvula forceps I have no fear of a repetition of the accident. The operation is a good one for submerged tonsils, because the tonsillar forceps is a strong instrument and may be crowded in above the velar lobe and under the bottom of the tonsil and thus be made to lift the tonsil completely from its bed. My greatest trouble used to be the application of the snare, because I seized the forceps with it instead of the tonsil. To overcome this I devised a snare guard which contains the wire while it is being carried over the forceps on to the tonsil. The wire used in this guard should be No. 6 piano wire, so that it may have stiffness enough to be crowded into the groove of the guard to keep it from slipping out. Many other operators have mentioned to me this same trouble of catching the forceps with the snare. I never have the tonsil pressed up, but prefer to crowd in beneath it with the tonsillar forceps. As to the anesthetic, I prefer ether to chloroform because I have had several cases where the latter anesthetic caused me much alarm. I have never had any trouble from ether and find that children often go to sleep more rapidly under ether than under chloroform. Tonsillectomy by cautery dissection is a bloodless operation so far as its immediate results are concerned, but I know from personal experience that secondary hemorrhages of an alarming nature quite often follow it.

DR. ROBERT C. MYLES, New York City.—Dr. Ingals has originated and explained the use of the snare, and when we shall have mastered all the details, this operation will be considered the best of all. He speaks of separating the anterior pillar from the tonsil. If the throat be examined carefully, it will be found that the tonsil does not touch the anterior pillar except at one spot; in the upper portion inferiorly it is not more than half an inch from the anterior pillar. If the tonsil can be cut from its surroundings, mucous membrane and investing sheath, there will be very little reaction. This is the most perfect operation, but it is limited in its application.

DR. J. A. STUCKY, Lexington, Ky.—What is Dr. Ingals' experience with the self-retaining tongue depressor?

DR. E. FLETCHER INGALS—I have one, but never use it. I did not speak of the benefits of a general anesthetic in the case of hemorrhage. I formerly thought a hemorrhage would never occur when the tonsils were removed with the snare, but I had one case in which it would have been very difficult to control had not the patient been under a general anesthetic which enabled me to grasp and tie the bleeding point. I think the uvula gets into the snare, especially in cases where the tonsils are large and in close apposition. I cut it off in my early cases before I adopted the plan of catching it with a pincette, but never have the accident occur now. One of the speakers suggested that there would be great difficulty in using the forceps in submerged tonsils, but it is in these very cases that it is of the utmost value. With the use of the hook, or tonsil dissector, the glands are dissected out with one motion, and they can then be easily grasped with the forceps. The anterior pillar should be caught with the hook at the upper part at the point where it is in apposition with the capsule. I very rarely use an assistant excepting to give the anesthetic. I used to have some one press up the tonsil just as I caught it with the forceps, but I seldom do this now, as in nearly all cases it is easy to catch it without. The use of heavier wire in order to avoid catching the forceps might possibly be some help. I have had the wire catch the forceps a good many times, but when the tonsil is large enough to be grasped firmly it can be lifted out so that the wire loop must necessarily slip under it. I am not sure about the reaction being greater by this method, but it has not seemed so to me.

Special Article.

IMMUNITY.

CHAPTER II.

INFECTIOUS ETIOLOGY.

The microbic cause of a disease must be in hand before any logical attempt can be made to prepare an immune serum for the disease. It is not in all cases necessary that the organism be cultivated artificially, however; the conditions in rinderpest may be cited in which the body fluids of a diseased animal, known to contain the infectious agent, are used for immunization, although the microbe itself can not as yet be cultivated or recognized.

There are so many possibilities of error, and so many errors have actually been made in regard to infectious etiology, that certain requirements in the way of proof are now habitually demanded before an organism can be accepted as the cause of a disease. These requirements are most frequently expressed in the form of Koch's laws, which may be stated as follows: 1. The suspected organism must be found constantly in the proper tissues of an animal suffering from the disease, or which has died from it. 2. The organism must be cultivated artificially in a pure state. 3. It must be possible to reproduce the disease in a suitable animal by inoculation with the pure culture. 4. The organism must again be cultivated in a pure state from the tissues of the experiment animal.

Koch's Laws.

Since these laws were formulated another procedure has been developed which may give valuable evidence as to etiology. This pertains to the agglutination test, or as we speak of it in connection with typhoid fever, the Gruber-Widal reaction. This principle, that in the acquiring of immunity to a microbic infection the serum of an individual gains in agglutinating power for the micro-organism, has been found to hold true in many infections. Consequently, if one has in hand the specific micro-organism for a disease, he would expect the patient's serum to have a stronger agglutinating power for this micro-organism than for others which were accidentally present; and this power would also be greater than that possessed by the serum of one who had not had this particular disease. In spite of some possibilities of error this test has been of distinct value in enabling us to recognize the specific microbe of a disease, as was the case in the identification of the germ of epidemic dysentery (Shiga).

Agglutination Test.

All Koch's laws have not been complied with in certain cases, because of various difficulties which have been encountered. First, the pathogenic protozoa can not be cultivated on artificial media (we must except the success of Novy and McNeal with certain trypanosomas); second, certain bacteria which may be found constantly in a given disease (spirillum of recurrent fever) have not been cultivated artificially; third, there are a few diseases which are peculiar to man and accordingly can not be reproduced in experiment animals (leprosy, influenza, scarlet fever, measles, etc.); fourth, some infectious agents are pathogenic for experiment animals, but do not reproduce in them a clinical or ana-

Obstacles to Koch's Laws.

tomic condition identical with that found in the original animal (typhoid).

Furthermore, failure to comply with all the requirements enumerated does not in some cases disqualify the organism as the causal factor. If an organism is found constantly in characteristic sites in a given disease and not in other infections, and if at the same time other microbes are not present or are present only by accident, there could be little or no hesitation in accepting this organism as the cause of the disease, even if it were impossible to cultivate it or to transfer the disease to animals. The typhoid bacillus has been cultivated from characteristic foci (stools, blood, spleen, urine, rose spots) in such a large number of cases, and the bactericidal and agglutinating powers of the patient's serum against this organism are so distinctive, that compliance with the third law, though desirable, is not now essential. The conditions are similar in reference to cholera and the cholera vibrio.

The conditions are so unique in some diseases that, although all Koch's laws have not been literally met, certain equivalents have been met. To illustrate, we may consider an anopheles mosquito which has become infected with the plasmodium of malaria by biting a malarial patient, as a culture medium; and the transferring of the infection to another patient by the bite of this mosquito as the inoculation experiment which is desired.

Specific Infectious Diseases.

The term "specific infectious disease" has come to have a very special meaning. It is applied to a disease having characteristic clinical and anatomic phenomena, which can be caused only by one particular micro-organism. Among the diseases which come within the limits of this brief definition, the following may be enumerated (the micro-organism which is the cause of each disease being also given):

Diphtheria	*Bacillus diphtheriæ*
Tetanus	*Bacillus tetani*
Typhoid fever	*Bacillus typhosus*
Cholera	*Vibrio choleræ*
Anthrax	*Bacillus anthracis*
Tuberculosis	*Bacillus tuberculosis*
Leprosy	*Bacillus lepræ*
Plague	*Bacillus pestis*
Dysentery (bacillary)	*Bacillus dysenteriæ*
Influenza	*Bacillus influenzæ*
Glanders (farcy)	*Bacillus mallei*
Chancroid	*Bacillus chancri mollis* (Ducrey)
Recurrent fever	*Spirillum obermeieri*
Gonorrhea	*Micrococcus gonorrheæ*
Epidemic cerebrospinal meningitis	*Diplococcus intracellularis meningitidis* (of Weichselbaum)
Actinomycosis	*Actinomyces bovis et hominis*
Blastomycosis	*Blastomycetes* and *Oidia*
Malaria	*Plasmodium malariæ*
Tick or mountain fever	*Pyroplasma hominis* (Wilson and Chowning)

A large number of animal diseases have their specific microbes, as do certain other human diseases which hardly concern us as to the subject in hand.

Unknown Etiology.

In addition to the diseases mentioned, there are several which from analogy we must place in the same group. Scarlet fever, measles, German measles, chickenpox, smallpox, yellow fever, typhus fever, hydrophobia and syphilis, are undoubtedly due to micro-organisms. Mallory recently found in the skin of four scarlet fever patients a protozoön-like body which he believes to be the cause of the disease, although he admits that much desired proof has not been obtained.[1] The *Diplococcus scarlatinæ* of Class, which a few years ago acquired some notoriety, has not been able to stand as the cause of scarlet fever in the face of rigid investigation.

Parker, Beyer and Pothier have announced the discovery of a protozoön, *Myxococcidium stegomyiæ*, in the mosquitoes which infect man with yellow fever; but Carroll maintains that this organism has no relation to the production of the disease. The *Bacillus icteroides*, which Sanarelli found in a rather high percentage of cases, is now generally considered as a contaminating organism.

It is possible that smallpox and vaccinia will be eliminated from the diseases of unknown causation, owing to the evidence of protozoön etiology that Councilman and his colaborers have obtained; however, for the present, the question may be considered *sub judice*[2] in view of the fact that the forms described bear a close resemblance to certain well-known types of cell degeneration.

The following animal diseases, of unknown etiology, may also be mentioned in this connection: Foot and mouth disease, peripneumonia, bovine pest, sheep-pox (clavelee), chicken-typhus or chicken-pest and epithelioma contagiosum of fowls.

Obstacles to Discovery of Microbes.

The following appear to be the chief reasons for the failure to discover the organisms of these diseases: 1. Inability to cultivate the microbe. (The spirillum of Obermeyer, and the leptothrix are examples of known organisms which have not been cultivated.) 2. Mixed, or symbiotic infections. It is conceivable that in some case the combined action of two micro-organisms may be necessary to cause the disease. The non-toxic products of the two may synthesize to form a toxic substance. 3. Unstainability of the microbe. 4. Ultramicroscopic size. The organism of the peripneumonia of cattle was cultivated by Nocard and Roux by growing it in a closed collodion sac which was placed in the peritoneal cavity of suitable animals. It is so small that its form can not be made out, and growth is recognized only by the clouding of the culture medium, and the increased virulence of the latter for animals.

Filterability of Viruses.

Some valuable information has been obtained by observing whether these infectious agents are so small that they will pass through dense filters of porcelain or infusorial earth. It has been found that the viruses of foot and mouth disease, peripneumonia, rinderpest, sheep-pox, chicken-typhus, horse sickness, epithelioma contagiosum of fowls, and yellow fever are filterable. This is determined by injecting the filtered culture medium or serum into susceptible animals. The viruses of smallpox and vaccinia are said to be non-filterable. Success in filtering the hydrophobia virus has recently been claimed by Remlinger. Inasmuch as scarlet fever, measles, chicken-pox, typhus fever and syphilis* can not be produced in animals, the filterability of their viruses is not at present susceptible of demonstration.

Non-Specific Infectious Processes.

There is a marked tendency in many diseases, typhoid, cholera, malaria, etc., for characteristic organs or groups of organs to be involved in some particular manner. These are features which stamp them as specific diseases. On the other hand, there is a large number of micro-organisms which cause no well-defined clinical and anatomic disease, but depending on various accidents, cause an inflammation now in one organ, now in another. Suppuration is not a specific disease because the pyogenic power is common to a large number of microbes.

A diphtheritic or pseudo-diphtheritic process in the mouth and throat may be caused by the diphtheria bacillus, streptococcus, staphylococcus, oidium or yeasts; bronchitis may be caused by the influenza, tubercle, plague and typhoid bacilli, and by the infecting agents of the acute exanthemata, etc.; pulmonitis by the pneumococcus, streptococcus, tubercle, plague, Friedlander and influenza bacilli, oidium, actinomyces, etc.; meningitis by the tubercle and influenza bacilli, streptococcus, staphylococcus, pneumococcus, gonococcus, diplococcus of epidemic meningitis, the syphilis virus, etc.; arthritis by the streptococcus, staphylococcus, tubercle bacillus, gonococcus, the virus of rheumatic fever, etc.; endocarditis by the streptococcus, staphylococcus, gonococcus, pneumococcus, tu-

1. Jour. of Med. Research, No. 4, 1904.

2. Jour. of Med. Research, No. 1, 1904.

*Recently syphilis has been inoculated successfully into anthropoid apes.

bercle bacillus, etc.; and septicemia by a whole host of organisms aside from those mentioned as causing specific diseases.

Within certain limits, however, there is often a degree of specificity in the processes produced by some of the organisms mentioned, which sometimes allows of clinical and anatomic differentiation. The infiltrating and rapidly extending invasion of the subcutaneous and connective tissues caused by the streptococcus can often be distinguished clinically from the slower, more circumscribed process of the staphylococcus. The conditions induced by the *Bacillus aerogenes capsulatus*, or bacillus of malignant edema, are in turn different from those of the streptococcus and staphylococcus. The membranous inflammation of diphtheria may in favorable cases be distinguished from that of the pyogenic organisms without bacteriologic aids. In this possibility, however, there lies no justification for neglect of the bacteriologic examination.

Mixed Infections.

The coexistence of two or more micro-organisms in a morbid condition is of very frequent occurrence, and some of the most interesting and important phenomena seen in infectious diseases are referable to mixed, secondary or superimposed infections.

Two exogenous infections may attack an individual at the same time. Measles and scarlet fever and diphtheria and scarlet fever have been known to coexist. Pneumococcus pneumonia and typhoid fever, chancre and soft chancre, chancre with pus cocci, syphilis and gonorrhea, diphtheria with streptococci, tetanus with gangrene-producing organisms, are common observations. One organism may intensify the virulence of another. Diphtheria accompanied by streptococcus infection seems to be more virulent than diphtheria alone. It is also believed that the presence of aërobic organisms (those which demand oxygen for their development) in a wound infected with the tetanus bacillus or the bacillus of malignant edema (anaërobic organisms), may increase the virulence of these infections. Streptococci are probably important organisms in scarlet fever for they are present in unusual numbers in the throat lesions and are often found in fatal cases in all the organs, yet it is believed that they constitute only a mixed or secondary infection superimposed on that of the scarlatina virus. The conditions are somewhat similar in smallpox, the pustules of which invariably contain streptococci, staphylococci, or both. In both scarlatina and smallpox these secondary infections may be responsible for many fatalities.

Pneumococcus pneumonia occurring during the course of, or during convalescence from the eruptive fevers, diphtheria, typhoid fever, erysipelas, a streptococcus septicemia developing during typhoid (giving rise to an irregular temperature curve), streptococcus infection of tubercular cavities, and the development of acute tuberculosis following or during measles —these are important examples of secondary infections.

We should naturally expect that the presence of a severe secondary infection might embarrass attempts at serum therapy. Experience on this point is practically limited to diphtheria, and there is no lack of evidence to show that the disease when complicated by severe streptococcus infections often can not be controlled by antitoxin treatment.

It may be emphasized that there are certain diseases where a wide dissemination of the bacteria is not necessary for the production of morbid phenomena; where, in fact, they may be entirely localized (diphtheria, tetanus), and the symptoms produced by virulent toxins which are readily dissolved in the body fluids and carried to important organs. More especially, those microbes are placed in this class which, in our artificial culture media (bouillon), produce their specific disease-producing toxins in a soluble form. The bacilli of diphtheria, tetanus, botulism and the pyocyaneus bacillus belong distinctively to this group.

Infectious Intoxications.

Snake venom and arachnolysin (spider poison) are the best known examples of soluble animal toxins. As will appear later, the serums of all animals probably contain a variety of toxins injurious to one or more species of animals.

(To be continued.)

Good Advice to the Young Graduate.—We clip the following from the *Tulane Phagocyte*, which is published in the interests of the alumni and students of the medical department of Tulane University, New Orleans: "We trust that our recent graduates, who have gone to take their places in doing the work and carrying the burdens of the profession, will devote some thought to the subject of this brief article. The man who enters the medical profession to-day, safeguarded as it is by proper legislation, equipped with excellent schools, given in some degree its proper place as a factor in the community, does not always realize that these things have not come of their own accord, but have resulted from the earnest and continuous efforts of his elder colleagues and their predecessors. The newcomers who fall heirs to the present state of the medical profession, social, political and scientific, owe a duty to that profession—to keep at least undiminished its present possessions and to add as much as may be proper and possible in each and every direction. Graduate of 1904, join your county or parish, your state, and finally the national society as the first step in the performance of this duty. Without organization very little is ever accomplished. Remember, too, that in thus doing your duty to the profession you will place yourself in the most advantageous position for doing your duty to yourself and to your patients. You will learn much that is valuable by rubbing against your colaborers, at the same time that you contribute to their acquisitions of medical lore. Again, your close acquaintance with them will give opportunities for co-operation to mutual advantage and eliminate unnecessary friction. Propinquity, they say, is the best matchmaker; it might be added that it is essential to friendmaking. Send in your application for membership in your local society and then go on up, through your state society, into the American Medical Association, without membership in which you ought to be unwilling to rest satisfied."

Wounds of the Cervical Portion of the Thoracic Duct.—P. Lecené (*Revue de Chirurgie*) reports a case in which the thoracic duct was divided in its cervical portion in the course of an operation for the removal of enlarged lymphatic glands in the neck. He has collected twenty-one cases of like character from the literature and he reaches the conclusion that such wounds, without being frequent, are not of exceptional rarity. They fall into two classes, according as they are observed in the course of an operation, or as the symptoms make their appearance afterward. In the first instance, the characteristic sign is the escape into the wound of clear or milky liquid, at times ejected rhythmically. In the second instance, the characteristic signs are the escape of chyle, either through the drain in the wound of operation, which often must be reopened; marked thirst, wasting, general asthenia and at times also oliguria. Among the twenty-two cases studied, death was noted in but one, and this occurred in the preantiseptic period. In all of the others, recovery ensued more or less rapidly as a result of the therapeutic measures employed. The prognosis as to life is, accordingly, not grave, although serious accidents may result from the loss of considerable amounts of chyle. The treatment varies in accordance with the conditions present. If the wound is discovered in the course of an operation, the peripheral portion of the duct should be ligated; the application of a ligature to the central portion is unnecessary in the vast majority of cases, as the valve in the duct is sufficient to prevent the escape of fluid. Ligation of the peripheral portion is unattended with injurious results, as has been shown by clinical observations on man and experimental observations on animals. Suture of the duct has been successfully effected in but one instance. The operation is applicable only in rare instances, in which the wound in the duct is incomplete. If the wound in the duct is not discovered until some time after the operation, a tampon may be applied, and recovery usually ensues rapidly. Reopening of the wound and exposure of the duct and its compression or ligation are permissible procedures and may prove successful, but they are always difficult and usually unnecessary, as simpler means generally suffice.

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NOTIFICATION IN PULMONARY TUBERCULOSIS.

In the January nmber of *McClure's* an article on the warfare against tuberculosis contains a severe arraignment of the medical profession. According to the author, physicians have not only, with a very few exceptions, played an insignificant part in the recent campaign to exterminate tuberculosis, but have actually hampered the work by their persistent opposition to the registration of cases and to the compulsory disinfection of infected dwellings. The author speaks of the "blind bitterness of prejudice" of the medical profession, "which is one of the most potent allies of the disease." The medical department of the University of Pennsylvania is credited with having defeated the compulsory registration law in that state, and in other states the opposition to such a law has always been headed by physicians. Chicago physicians are accused of sending such untrustworthy reports as to deaths from tuberculosis that the department of health is forced to depend on undertakers' certificates for its mortality statistics. The same opposition on the part of the profession is said to stand in the way of compulsory disinfection. As a single instance, Indiana is said to have a state law providing for compulsory disinfection, but "public sentiment led by medical sentiment" is against it.

Such criticism, absurdly unjust as it seems, should not be passed over lightly, for it may contain some slight element of truth. Of course, a popular writer can hardly be expected to realize that no progress would ever have been possible in the warfare against tuberculosis had the medical profession shown the indifference with which he charges it. On the contrary, all popular movement in this direction must necessarily follow the lines laid down by medical science.

The reason why laymen have taken so prominent a part in this movement is that tuberculosis is a disease depending largely on social conditions which can be corrected only by the efforts of the community at large. The profession has recognized this social element in tuberculosis for almost twenty years and, had the laity been prompt to follow the teachings of physicians, the disease would have been half conquered by now. The point in these charges which is worthy of serious attention is the alleged opposition to compulsory registration and disinfection on the part of the medical profession. It is perfectly true that there is a widespread feeling of opposition to registration, which must have some reasonable basis or it would not exist. The cause given by the author of the article is that physicians object to making official reports for which they are not paid. This objection may exist in the minds of some physicians, yet undoubtedly the majority are actuated by motives of a quite different order; they fear, and perhaps justly, that the compulsory reporting of cases will so attract public attention to the infectiousness of tuberculosis as to increase in the popular mind the already exaggerated fear of contact with tuberculous persons, and also that this measure will subject their patients to annoying interference and publicity.

As to the first objection, namely, that physicians decline to report because they are not paid for doing so, the most obvious counter-argument is that the state confers special privileges on physicians, for example, freedom from jury duty and preference in the payment of claims against an estate, and in return for these the state may reasonably demand such a service as the reporting of contagious diseases, even if it had not the supreme right to demand any service which the public health required.

The other two objections must be treated with far more respect. Phthisiophobia is a real danger. We are all aware of the fact that the chief progress the laity has so far made in the understanding of tuberculosis is to acquire an exaggerated idea of its infectious nature. Indeed, thus far the "tuberculosis crusade" seems to have doubled the hardship to a great number of consumptives by making them objects of fear and suspicion, while it has succeeded in alleviating the lot of only a small minority. If it were true that registration could not be carried on without increasing this undue dread of the consumptive, then the measure could not be justified, however useful it might prove in the gaining of important information. It is, however, perfectly possible to devise a practicable method which shall furnish the desired information without violating the physician's confidence. The practice has been tested and found to work successfully of furnishing to physicians postal cards on which the name and address of the patient is to be written and a statement made as to whether or not the physician desires to have an inspector sent from the board of health to visit and instruct the patient and his family. In case the inspector's visit is not required the matter ends there; the board of health has gained its information, and the patient is not even aware that a report has been made. It is true that complaints have sometimes been made that after a report has been sent in the patient is assailed by advertisements of proprietary remedies and so-called cures for consumption. If such complaints are in any degree justified by the facts, they do not at all impeach a proper system of registration, but only impeach the board or bureau, through the connivance of whose officials lists of tuberculous patients are obtainable.

The value to the public health of a system of registration of all tuberculous cases can hardly be denied by any one who has at all concerned himself with the modern warfare against this disease. The same may be said of the corollary of this measure, namely, compulsory disinfection of dwellings. The first essential in combating any infectious disease is definite knowledge of its extent and distribution, and how is this knowledge possible unless all cases of the disease are reported? The importance of house infection in the spread of tuberculosis is receiving more attention all the time, and it is difficult to see how any one familiar with the poorer part of our population, whether in country or city, can object to a measure which aims to remove this particular source of infection.

New York City, after several years of compulsory registration of tuberculosis, has succeeded in collecting a most valuable series of statistics which enable her to find the plague spots in that city, and to inaugurate rational sanitary reform. It is not by covering up the actual facts as to the extent of the disease, while encouraging a general agitation as to its infectiousness, that we may hope to rid the popular mind of phthisiophobia. General apprehension as to the dangers of tuberculosis has been enough aroused, it is now time to turn this feeling into constructive channels.

As a basis for sanitary reform of the poorer parts of a city, for compulsory disinfection of infected houses, for the proper location of dispensaries for the tuberculous poor and for the consequent erection of appropriate sanatoria for different classes of patients, a knowledge of the distribution of the disease, which can only be gained by a good system of registration, is essential.

ALBUMINURIA DUE TO PALPATION.

The prompt reaction of the kidneys to circulatory disturbances has long been known, and albuminuria of a transitory character dependent on such changes is not infrequently seen. It has also been shown experimentally that thoracic compression, general, or confined to the lower thorax, and general abdominal compression will cause transitory albuminuria. That direct manual compression of the kidneys may, under certain circumstances, cause albuminuria has not been so widely recognized.

Schreiber[1] has recently called attention to this form of albuminuria, which he characterizes as renal palpatory albuminuria. It was first described by Menge in 1880, but its clinical possibilities do not seem to have been appreciated at that time. Schreiber restudied the phenomenon, and endeavored to find out how normal and movable kidneys reacted under palpation. Dividing movable kidneys into three grades, according to the classification suggested by Hilbert, he found that in the medium and severe grades palpation was always followed by albuminuria, and in the mild grades palpatory albuminuria was almost constant.

The degree of albuminuria varied in different cases, and did not necessarily correspond to the grade of dislocation, to the palpability of the kidney, nor to the duration of the palpation, as might have been expected *a priori*. In 41 cases in which albuminuria was present, there was only a trace in 14, while in the other 27 the amount varied from a slight flocculent precipitate to 3 per mille by Esbach's method. The duration of the albuminuria was usually very short, and in this it differed from the albuminuria of organic disease. Schreiber states that the urine should never be examined later than ten minutes after the palpation has been done, as in one of his cases the albumin had disappeared after twelve minutes. In some cases albumin was still present two hours after the palpation, but such cases were exceptional.

The urine generally showed physical and microscopic changes when albumin was present. After palpation it was often lighter in color than previously, and in some cases an excess of phosphates was present. The microscope always showed an increase in the epithelial cells, and frequently red blood cells and leucocytes were found. The leucocytes were generally partly polynuclears and partly mononuclears, but in one or two instances were almost entirely lymphocytes. In no instance were true casts found, though occasionally pseudo casts were present.

Schreiber discusses various possibilities regarding the origin of the albumin. It can not be due, he thinks, to actual injury to the kidney tissue, for it is too transient, nor can it be due to injury of the vessels with rhexis, because red blood cells are not constantly present. He inclines to the belief that a variety of factors are concerned, and he cites, as the most important, pressure of blood serum from the blood vessels, pressure of lymph from the lymph channels and changes in the blood pressure. The not infrequent presence of blood cells shows the likelihood of the first cause, the occasional exclusive presence of lymphocytes the second, and the fact that the albuminuria is at times out of all proportion to the intensity of palpation the third.

In the latter part of his article Schreiber discusses the effect on the kidney of indirect compression such as is exerted on the right kidney in palpating the liver. He also cites cases to show the value of the procedure in dystopia of the kidney and in doubtful abdominal tumors. So far as indirect palpation is concerned he comes to the conclusion that it very seldom produces albuminuria, and when it does the albumin is very slight in amount. His cases demonstrate that palpatory albuminuria may be of distinct value in differentiating obscure abdominal tumors. He suggests that in some cases the use of his method may obviate the necessity of more serious procedures, such as catheterization of the ureters, or exploratory laparotomy. Schreiber does not

1. Zeits. für klin. Med., p. 55.

claim marvelous results from his method, but simply regards it as an aid to other methods which at times may be of value; as such it is worthy of extended trial.

EXPERIMENTAL STREPTOCOCCUS ARTHRITIS IN RELATION TO THE ETIOLOGY OF ACUTE ARTICULAR RHEUMATISM.

In England the view seems to be gaining ground that acute articular rheumatism is caused by a special microorganism—*Micrococcus rheumaticus*—which has been isolated by various investigators from the blood, the urine and the joints of cases clinically regarded as acute articular rheumatism. Naturally, this view was materially strengthened when it was found that this coccus, which does not present any decisive cultural and morphologic differences from ordinary streptococci, produces arthritis and endocarditis when injected into rabbits. Most recently Beattie,[1] for example, after working with an organism obtained from the synovial membrane of a girl with acute rheumatism, came to the conclusion that *Micrococcus rheumaticus* is a distinct microbe, and the special cause of acute rheumatism.

There seems, however, to be good reason to go slowly in accepting this conclusion as final. There are, indeed, two very weighty objections in particular that must be removed before such acceptance can become possible. The first is that competent observers in various countries—Cole in Baltimore and Jochmann in Breslau, among others—have failed to find *Micrococcus rheumaticus* or any other microbe in the joints or in the blood of typical cases of acute articular rheumatism. The second objection is that Cole[2] has been able without any particular difficulty to produce in rabbits arthritis and endocarditis by means of intravenous injections of streptococci from diverse sources.

The results obtained by Cole were in every way quite similar to those obtained by the English observers on injection of the so-called *Micrococcus rheumaticus*, and regarded by them as sufficiently distinctive effects to justify them in regarding this microbe as a definite variety or species of streptococcus. Manifestly, the faculty of producing arthritis and endocarditis in rabbits by itself does not warrant the establishment of a distinct form of streptococcus. In view of these two objections we clearly are not warranted in regarding the etiology of acute rheumatic fever as solved in the sense of the English observers. Of course, it must be acknowledged that their work seems to emphasize the importance of streptococci in causing articular and endocardial lesions similar to those of acute rheumatism. Whether streptococci are the real cause of acute rheumatic fever—much might be cited that speaks for such a view—is, however, a question that can be solved only by continued investigation. The negative results obtained by Cole, Jochmann and others from their cultural experiments indicate at least that the complete solution of the problems connected with the etiology of acute rheumatism is not such an easy matter as it might appear at first sight.

1. Brit. Med. Jour., Dec. 3, 1904.
2. Jour. of Infec. Dis., 1904, vol. I, p. 714.

TRUTH AND POETRY CONCERNING URIC ACID.

IV.

Horbaczewski, as we have pointed out, demonstrated the very important fact that uric acid may be derived from nucleins, but went off at a tangent and maintained that it does not come from all nucleins, but only from the nucleins of leucocytes. His arguments, it must be admitted, sounded plausible enough. He maintained that his studies showed, as a rule, a parallelism between leucocyte counts and uric-acid excretion. Where the parallelism failed he explained the discrepancy by assuming a class of leucocytoses without leucocytic destruction. The blood of children contains more leucocytes than that of adults and this, he believed, accounts for the relatively great excretion of uric acid in the former. Further, he brought the increased excretion of uric acid after eating, especially after a meat diet, into relation with the digestive leucocytosis. Feeding nucleins increased uric-acid excretion, but so convinced was he of his new view, that he assumed that the nucleins fed acted only indirectly by first producing a leucocytosis. Quinin diminishes leucocytosis, accordingly Horbaczewski thought it diminishes uric-acid excretion. Pilocarpin, he stated, increases both uric-acid excretion and the leucocyte count.

Medical men for a time rushed like a flock of sheep after Horbaczewski. Hypnotized, as it were, by the brilliant proof of the origin of the uric acid from nuclein, they were eminently susceptible to any suggestion that came from him. Thus Horbaczewski's theory of an origin of all uric acid from leucocytic nuclein alone, despite its flimsy foundation, met with remarkably general approval and acceptance. Many confirmatory reports of uric-acid determinations running parallel to leucocytoses were made; discordant findings were lightly explained away.

A new impetus to work on the urine was given in 1895 by Krüger and Wulff, who introduced a method for easily and quickly determining the amount of alloxuric bodies (uric acid plus xanthin bases) excreted. The idea gained ground that some of the discrepancies in the results above referred to might depend on the fact that in the decomposition of leucocytic nucleins both xanthin bases and uric acid are formed and that the relative amounts of these vary under different conditions of metabolism; if the total alloxuric bodies could be easily determined a parallelism of their excretion with the leucocyte count might, it was hoped, prove to be more constant than that of the uric acid alone. Leukemia was the disease which invited a special investigation in this regard, and between 1894 and 1898

we find a number of researches bearing on this subject. The results were, however, very conflicting, and in 1897 Hüppert and, in the same year, independently, Salkowski proved the total unreliability of the method of Krüger and Wulff; no importance, therefore, is to be attached to results based on its application to the study of our subject unless they are also supported by more accurate analytical methods.

Even when more exact methods were employed, very contradictory results were obtained by equally good observers. In the study of pneumonia, especially, there was no concordance. While some maintained that the uric-acid excretion is increased at the height of the leucocytosis, others asserted that it is only after beginning absorption of the exudate that uric acid is excreted in larger amounts. The studies by Kühnau[1] were among the most elaborate. He corroborated Horbaczewski's view as a result of his examination of the metabolism in pneumonia and pleurisy and where a leucocytosis appeared with no corresponding increase in uric-acid excretion he even thought it probable that the leucocytes wander gradually back into the tissues without undergoing destruction.

A modification of Horbaczewski's view was suggested by Dunin and Nowaczek.[2] These investigators denied that the increased uric-acid excretion in pneumonia keeps pace with the increase of leucocytes in the blood, but attributed it solely to the absorption of the resolving exudate, and Carlyle Pope's findings in 1899 may be similarly interpreted.

Richter,[3] in 1895, had published a long series of observations which indicated that no constant relation between leucocytosis and uric-acid excretion can exist; in spite of his results he still leaned more or less on Horbaczewski's view.

Enough has been said, perhaps, to show what a sorry state the subject was in at this time. Some workers felt sure that the presence of a leucocytosis in the peripheral blood indicates an increased destruction of leucocytes; others were equally sure that a hypoleucocytosis is a certain indication that leucocytes are being destroyed, both sides apparently forgetting two important facts (1) that the number of leucocytes existent at any time represents the algebraic sum of the leucocytes manufactured and the leucocytes destroyed, and (2) that the number of leucocytes present in a peripheral vessel often depends on abnormal distribution rather than on abnormal production or destruction.

The factor of distribution of leucocytes in relation to leucocytosis was emphasized by Rieder in 1892 and later by Goldscheider and Jakob in 1894. John Billings, Jr., at the Johns Hopkins Hospital proved how the cold baths given to typhoid patients temporarily lead to accumulations of leucocytes in the cutaneous blood vessels, and Bohland,[4] in 1899, showed that atropin causes hypoleucocytosis in peripheral vessels, while the capillaries of the lungs are dilated and crowded with leucocytes; pilocarpin causes diminution of the leucocytes in the lung capillaries. Pilocarpin, it is said, increases uric-acid excretion, while atropin does not. His explanation was that pilocarpin increases the decomposition of nuclein, in spite of the absence of leucocytosis, and so more uric acid is excreted.

The sum of all these researches shows that while destruction of leucocytes in the body leads to increased uric-acid excretion, the number of leucocytes in the peripheral vessels is no gauge for the amount of leucocyte destruction going on nor for the amount of uric-acid formation. Moreover, a whole series of conditions has been studied in which there is increased uric-acid excretion without leucocytosis or evidence of leucocytic destruction. In many of these conditions nucleated cells other than leucocytes are destroyed. Again, as Minkowski[5] states, there is good reason to believe that an increased function of nucleated cells, without actual cell destruction, may be sufficient to augment nuclein cleavage and uric-acid formation. Indeed, it is not impossible, as Melis-Schirru[6] suggests, that increased uric-acid excretion and leucocytosis may be due to one and the same cause. If the activity of the hemopoietic organs be increased from any cause, the first expression may be an augmented nuclein metabolism; if the activity be still further exaggerated, leucocytosis results.

Strangely enough, as far back as 1892, Mares[7] had recognized the fallacies of Horbaczewski's arguments and made their insufficiency clear. At that time he accepted an origin from nuclein, but urged (1) that uric acid may be formed by a vital chemical process through gradual metabolic decompositions of nuclein instead of by the passive process of cell-death and nuclear destruction and (2) that the nuclein of any of the body-cells, and not simply that of the leucocytes, may give rise to uric acid. Horbaczewski's star was, however, so in the ascendant at that time that but little attention was paid to these keen observations of Mares. And even Mares did not see the whole truth, for he denied the direct transformation of the nucleins of the food into uric acid; as to the possibility of the latter process we shall have something to say in a succeeding issue.

1. Kühnau, W.: Experimentelle und klinische Untersuchungen über das Verhältniss der Harnsäure-ausscheidung zur Leukocytose. Ztschr. f. klin. Med., vol. xxviii, 1895, p. 534; Ueber das Verhalten des Stoffwechsels und der weissen Blutelemente bei Blutdissolution. Deutsche Arch. f. klin. Med., vol. lviii, 1897, p. 339; see also Kühnau und Weiss: Weitere Mittheilungen zur Kenntniss der Harnsäureausscheidung bei Leukocytose und Hypoleukocytose, sowie zur Pathologie der Leukämie. Ztschr. f. klin. Med., vol. xxxii, 197, p. 482.

2. Dunin, T., u. Nowaczek, S.: Ueber Harnsäureausscheidung bei croupöser Pneumonie. Ztschr. f. klin. Med., vol. xxxii, 1897, p. 1.

3. Richter, P. F.: Ueber Harnsäureausscheidung und Leukocytose. Ztschr. f. klin. Med., vol. xxvii, 1895, p. 290.

4. Bohland: Ueber die Einwirkung der Hydriotica und Antihydriotica auf den Leukocytengehalt des Blutes. Centralbl. f. inn. Med., vol. xx, 1899, p. 361. Ueber den Einfluss einiger Arzneimittel auf die Bildung und Ausscheidung der Harnsäure. Münch. med. Wochenschr., vol. xlvi, 1899, p. 505.

5. Minkowski, O.: Ueber Leukämie und Leukocytose. Verhandl. des xvii Kongr. f. inn. Med., 1899, p. 158.

6. Melis-Schirru: Sulla genesi dell'acido urico. Centralbl. f. inn. Med., vol. xx, 1899, p. 1042.

7. Mares: Zur Theorie der Harnsäurebildung im Säugetierorganismus. Monatsh. f. Chem., vol. xiii, 1892, p. 101.

DAWN?

The "divine healing" business seems to be going awry. So long as there is "money in the business," divine healing is a fine thing to dole out to the other fellow. Of late there have been unmistakable signs that when the "healer," the "Elijah," the "apostle," gets ill the faith business appears depressed. Dowie and his family are seeking health in the Bahamas, where probably they are plucking "leaves of healing" from the tropic vegetation. At least, as a coincidence, apparently as a not unnatural sequence, we see in the newspapers of late no stories of remarkable "cures" performed by "the prophet." There are not lacking signs that a portion of the public is getting its eyes opened.

AN ENCOURAGING SIGN.

A comforting sign of the time in Chicago is the very general and respectful attention given by the public to the excellent hygienic suggestions offered weekly by the *Bulletin of the Health Department* of Chicago, and willingly reprinted by the newspapers. Seldom has it been the case that advice of this sort has been so respectfully received by American communities. The fact is a most encouraging omen to those medical men to whom it seems, at times, as if the public cared naught for their hard work for the good of the community. Other reward is largely denied the sanitarian. At least, it is for him a comfort to know that a community has learned to listen attentively and to give heed, to a certain extent at least, to advice and suggestions offered by medical men.

TEA DRINKING.

Every little while there is an outcry against the practices of tea and coffee drinking. Lately it has been alleged that the degeneracy observed in the lower classes of Great Britain is largely due to the immense quantities of tea which is drunk in that kingdom. Without any doubt, a few people do drink too much tea and would be better without it. But tea drinking, as in China, may be the salvation of a people from much greater evils. The decoction has at least the advantage of having been sterilized by heat, and water drinking in China has its dangers, as many an old traveler can testify. The immense quantities of tea used without apparent damage by some of the most robust peoples in the world other than the Chinese, such, for example, as the Russians, the Hudson Bay voyageurs and the lumbermen of the North, does not testify to its evil effects on general health, under proper conditions. For a cold country it is almost an ideal stimulant, reviving the energies, even after almost apparently complete exhaustion, and affording a feeling of comfort that hardly anything else can give, and this without any noticeable uncomfortable after-effects. Of course, in our civilization there are some who take too much of many things for their own good, but even in these cases it is hard to say that the evil is as great as sometimes charged. The practice of giving large quantities of strong tea to mere infants, which is common among certain of the poorer classes of our cities, of course can not be too much condemned, but it is astonishing how many infants seem to thrive on it. There should be some discrimination in the general condemnation of such stimulants as tea and coffee. They probably do more good than harm, and we should welcome their use if by any means or to any extent they can be made a substitute for things that are worse, and if the habit were universal in some of our insanitary communities we might find it here, as among the earthly Celestials, the safeguard against many serious evils. If the question is asked, "What is the poor man to drink?" there need be no hesitation in answering: "Tea."

NATIONAL DIET AND ITS CHANGES.

The diet of a country is popularly supposed to be an important element in making and fixing the character of its population, and yet it may be that we overestimate its importance in this regard. According to census statistics, there has been a large decrease in meat consumption and a corresponding increase in that of cereals and vegetables. Thus in 1850 the consumption of wheat was 4.30 bushels to each American. In 1900 it was 6.23 bushels. The Scotch diet of oatmeal has been adopted by the Americans within the last fifty years to a very great extent, as shown by the increase of from 0.90 bushels in 1850 to 3.86 bushels per capita consumption in 1890. There has been a corresponding increase in the item of vegetables, though the use of potatoes seems somewhat to have decreased. The use of sugar has nearly tripled per capita in the last fifty years, showing the importance of this carbohydrate in our diet. All this does not mean that we are becoming a nation of vegetarians, for we are still large meat-eaters and probably will continue to be such. It means, however, that the country is growing older, and is assimilating itself more and more in the matter of diet with other older countries. How far this will affect the national character no one can absolutely foresee, but that it will seriously modify it may be doubted.

THE PERIODICITY OF DREAMS.

Dreams are experiences shared by all mankind and their pathologic importance in some cases has always been recognized. They seem, however, to follow no laws. At least this has been the generally accepted opinion. Recently, however, an Austrian investigator, Dr. Herman Swoboda, has claimed that dreams follow a certain periodicity, that certain impressions or events are revived in the visions of the night at regular intervals; in men usually every twenty-three and in women every twenty-eight days. He has been able to predict certain specified dreams, he claims, according to this law, and gives instances which, he thinks, substantiate his position. He also utilizes this periodicity to explain certain peculiar phenomena, such as premonitions of facts occurring at multiples of the stated periods. The suggestion is an interesting one, but it appears to us that it will require a very much more extensive series of observations before it can be accepted as a law. There are comparatively few of us that can recall our dreams unless they are especially impressive, and even such

dreams are apt to be forgotten quickly. That they are connected with certain bodily conditions is generally agreed, and when these are of a cyclic or periodic character it would not be remarkable if they were accompanied with certain modifications of the subconscious intellection of the slumbering state. Even here, however, we have certain difficulties in the study. A German medical man of some prominence in science once reported that he and another colleague made a special study as to the periodicity of certain classes of dreams, but came to the conclusion that there was no general law controlling their appearance. It would be unorthodox to assert that premonitory dreams have not occurred in the past, but it would be exceedingly uncomfortable if we had to admit their frequent occurrence in the present. While the line of study opened up by Swoboda is a captivating one, we still prefer to keep our expectations moderate as to its results.

ORGANIZATION OF HEALTH BOARDS.

As a direct result of the growth of our knowledge of the nature and cause of preventable diseases, infectious and otherwise, the work of our boards of health and public health officers is assuming constantly increasing scope and importance. Practically every state, every city, every village and every township in the United States has adopted various regulations and has established certain procedures looking to the preservation of health and prevention of disease, and has placed the carrying out of these measures in the hands of officials such as the members of the boards of health and the health officers. In most states, however, these various officials are working more or less by themselves, with comparatively little opportunity for helpful discussion of common problems with fellow-officials. It would seem that the time is ripe for discussion of the desirability of drawing together into voluntary associations for mutual and public benefit all the health officers in a state. The work which is being done by the Association of Massachusetts Boards of Health shows that much good may be accomplished in this way. The journal of this Association can not but be a direct stimulus to the Massachusetts health official. There are so many details in connection with public-health work in regard to which the public must be educated that, on this account, concerted action is required by those best acquainted with the situation, if satisfactory progress is to be made. For example, in many places the legal status of the health officer is far from satisfactory, and in view of the importance of his work the pay is generally inadequate. Lawmakers must be educated to understand that in matters of public health the best available expert service is none too good, and that expert service means expert pay. Again, concerted action of officials directly interested is needed to secure as promptly as possible adequate state and municipal bacteriologic and pathologic laboratories. In this important respect the first step is still to be taken in many states and cities. Naturally, associations of this kind would aid in securing intelligent, harmonious, well-organized administration of well-considered regulations in regard to matters of public health. For these, and for other reasons, state associations of boards of health would seem to be an important step in the development of public health in this country.

Medical News.

DISTRICT OF COLUMBIA.

Personal.—Dr. Carl H. A. Kleinschmidt, ex-president of the Medical Association of the District of Columbia, who has been seriously ill for some time, is now reported to be out of danger.

Incorporation Bill Referred.—The bill to incorporate the American Medical Association has been referred to the subcommittee of the judiciary committee, composed of Hon. Richard Wayne Parker, New Jersey; Hon. H. W. Palmer, Pennsylvania, and Hon. D. A. Armond, Mississippi, for consideration and report.

Health Report.—The report of the health officers for the week ended January 21 shows the total number of deaths to have been 138, of which number 80 were white and 58 colored. There were 90 births and 17 stillbirths. At the close of the week there were under treatment 22 cases of diphtheria, 34 of scarlet fever, 72 of typhoid fever and 2 of smallpox.

ILLINOIS.

Change in Wards.—The old contagious disease ward in Cook County Hospital is to be transformed into a medical ward with a capacity of 100 beds. The necessary alterations will cost about $4,000.

Personal.—Dr. Charles F. Smith, Kankakee, was painfully injured by being thrown from his sleigh in a runaway, January 17.——Dr. Charles M. Bumstead, Monticello, underwent an operation for fistula, at St. Mary's Hospital, Decatur, January 20.

Suit Dropped.—In the suit of J. L. Owens against Dr. Henry J. De Haan, East St. Louis, in which $10,000 damages was claimed for alleged malpractice in the treatment of a fracture of the thumb, the plaintiff's attorneys took a non-suit, after witnesses for the defense had testified.

Itinerant in Trouble.—"Dr." Bixler, a traveling "tape-worm doctor," is under charges, at Kankakee, of practicing medicine without a license. It is alleged that he gave medicine to "induce" a cancer of the stomach to pass through the bowels. The cancer was not complaisant and the patient died.

State Board Re-election.—At the annual meeting of the State Board of Health, held in Springfield, January 31, the following officers were re-elected: Dr. George W. Webster, Chicago, president; Dr. James A. Egan, Springfield, secretary, and Dr. Peter H. Wessel, Moline, treasurer. Plans for the board's crusade against tuberculosis were mapped out, and a bill recently introduced in the legislature providing for the establishment of a state hospital for consumptives was approved.

Chicago.

New Hospital.—A building site, 100 by 280 feet, at 1222-1224 North Clark Street, has been purchased by Dr. Emil G. Beck, on which he purposes to erect a hospital to cost $80,000.

Physician Held Up.—Dr. Erasmus M. Hill, a physician of the health department, while coming from the disinfection of a house which he had superintended, on account of smallpox, was held up by two men, January 27, and robbed of his money, revolver and pocket case.

The Week's Mortality.—During the week ended January 28, 558 deaths were reported, equivalent to an annual death rate of 14.61 per 1,000. During the previous week there were 591 deaths, and in the corresponding week of 1904, 549 deaths. The principal death causes were as follows: Pneumonia, 96; consumption, 60; Bright's disease, 44; violence, 39; heart diseases, 36; and nervous diseases, 30.

Increase in Pneumonia Mortality.—During November, the first month of the current pneumonia season, there were 260 deaths reported to the department of health, from this cause—a daily average of 8.6. In December there were 451 reported—a daily average of 14.5 and an increase of 40 per cent. During the 28 days of January there were 459 pneumonia deaths—a daily average of 16.4 and an increase of 11.5 per cent. over the December rate.

INDIANA.

A Four Per Cent. Verdict.—In the damage suit for $5,000 brought by Charles E. Gallimore against Dr. Oliver James Cory for alleged malpractice, the jury awarded the plaintiff $198 damages.

Asylum Physician Exonerated.—Dr. John F. Glover, assistant physician at the Southern Indiana Hospital for the Insane, Evansville, was exonerated on the charges of cruelty to inmates of the institution, after an investigation made by the governor and the State Board of Charities.

Has Mental Disease.—Dr. Monroe W. Webster, South Whitley, township trustee, has asked that a guardian be appointed, as he realizes that he is at times unaccountable for and unconscious of his actions. The disability is due to business and financial worries. He has been sent to a sanitarium for treatment.

Teachers' Society Organized.—About seventy of the instructors in the various deparments of the Medical College of Indiana have organized the Teachers' Society of the Medical College of Indiana, with the following officers: Dr. Frank B. Wynn, president; Dr. Norman E. Jobes, vice-president, and Dr. William T. S. Dodds, secretary-treasurer.

Property Goes to Hospital.—Mrs. Harriet Jones, New Albany, who died January 16 at St. Edward's Hospital, has provided in her will that after all just debts are paid, her home property shall be given to the institution.——In default of heirs, the property of the late Rev. John A. Mack has been awarded to St. Joseph's Hospital, Logansport.

Osteopath Fined.—Edward C. Crow, Elkhart, was convicted in the Circuit Court, January 4, of practicing medicine without a license, and was fined $25 and costs, amounting in all to $61.25. The court instructed the jury that it was unlawful for any person in Indiana to practice what is known as osteopathy without having first secured a license to practice medicine, of a limited license, or a license to practice osteopathy.

December Morbidity and Mortality.—Bronchitis, tonsillitis, influenza and pneumonia were the prevailing diseases in December. The exact order of prevalence was: Bronchitis, tonsillitis, rheumatism, influenza, pneumonia, scarlet fever, pleuritis, smallpox, typhoid fever, intermittent fever, diphtheria, erysipelas, diarrhea, inflammation of bowels, whooping cough, puerperal fever, typho-malarial fever, dysentery, cholera morbus, cerebrospinal meningitis and cholera infantum. Smallpox was less prevalent than in the same month last year. There were reported 472 cases in 38 counties, with 8 deaths. In the same month last year 523 cases in 50 counties, with 2 deaths. There was, therefore, a decrease of 9.7 per cent. in cases, of 5 per cent. in area invaded, and an increase of 300 per cent. in deaths. Not until deaths appear in a local smallpox epidemic can physicians induce the people to be vaccinated. Vanderburg County had 122 cases of smallpox; Dubois, 53 cases, 3 deaths; Clay, 12 cases, 1 death; Vigo, 53 cases, 4 deaths; Clinton, 12 cases; Floyd, 41 cases, and Boone, 12. The total number of deaths in the month was 8,856, equivalent to an annual rate of 12.6. In the same month last year 2,854, rate 12.6. The principal causes of death were: Consumption, 368; pneumonia, 351; violence, 163; cancer, 121; typhoid fever, 67; diphtheria, 33; scarlet fever, 22; diarrheal diseases, 28, and cerebrospinal meningitis, 30.

Personal.—Dr. Lewis L. Williams, Brazil, has been reappointed secretary of the Clay County Board of Health.——Dr. David L. Kahn and family, Indianapolis, have returned after a year in Europe.——Dr. John B. Fattic, Anderson, local surgeon for the Big Four System, has resigned.——Dr. Solomon D. Kell has been re-elected for the fourth time, secretary of the Liberty Board of Health.——Dr. James W. Milligan, South Bend, has been appointed physician and surgeon to the state penitentiary at Michigan City, vice Dr. H. Lee Streaker, resigned on account of ill health.——Dr. Nicholas A. Kremer, Madison, has been made secretary of the Jefferson County Board of Health.——Dr. Harry H. Weist, Richmond, was painfully injured in a collision between his buggy and an electric car, January 2.——Dr. P. Livy Schuyler, Evansville, was painfully injured in a collision between his bicycle and a cab, December 29.——Dr. Charles F. C. Hancock, Jeffersonville, has been elected state senator.——Dr. John Halton and family, Muncie, have moved to Sarasoto, Fla., where he will have charge of a new hospital.——Dr. Charles M. Brown, New Marion, treasurer-elect of Ripley County, has filed a bond of $400,000.—Dr. Anthony E. Otto, Alexandria, fell on the ice at Orestes and broke his leg, January 16, while making a professional call.——On the occasion of the eighty-ninth birthday anniversary of Dr. W. H. Wishard, January 17, about 100 members of the Indianapolis Medical Society called on him and presented him with a testimonial engrossed on parchment.

IOWA.

Shelby County Medical Society held its annual meeting in Harlan, December 6. Dr. Mary C. Heilesen, Elkhorn, was elected president; Dr. Edwin B. Moore, Harlan, vice-president, and Dr. Frank H. Allen, Shelby, secretary-treasurer.

Marion County Medical Society held its annual meeting at Knoxville, December 8. Dr. Gaylord Worstell, Knoxville, was elected president; Dr. James L. Miller, Pleasantville, vice-president; Dr. Corwin W. Cornell, Knoxville, secretary, and Dr. John V. Brann, Knoxville, treasurer.

Hospital Control Transferred.—The Woman's Christian Association Hospital, Council Bluffs, has surrendered its control and management to the medical men of the city, who were represented by a committee consisting of Drs. Donald Macrae, Jr., Mathew A. Tinley and F. W. Dean.

Staff of Children's Home.—The following were elected as the medical staff of the Iowa Children's Home, Des Moines, at a meeting held January 16: Dr. James W. Cokenower, president and surgeon; Dr. James W. Osborn, secretary; Dr. William W. Pearson, ophthalmologist; Dr. Clifton Scott, neurologist, and Drs. Bernard J. Callahan, Wilbur S. Conkling, Roderic F. Watts, Francis A. Ely and C. A. Ayres, attending physicians.

New Hospital at Creston.—A new hospital, thoroughly outfitted, to be known as Mercy Hospital, is to be established in Creston, in the building formerly occupied by the Tait Sanitarium. The officers of the hospital association are: Hon. D. W. Higbee, president and counsel; Dr. Harry E. W. Barnes, vice-president; Dr. T. Elliot Tait, treasurer; Dr. John W. Reynolds, secretary, and Dr. J. W. Coakley, superintendent. The institution can accommodate forty patients.

KANSAS.

Personal.—Dr. Chilton W. McLaughlin, Kansas City, has returned after a trip to Europe.

Unlicensed Practitioner in Jail.—G. W. Knox has been convicted in Labette County of practicing medicine without a license and has been fined $50 and costs. On his refusal to pay the fine he was remanded to jail.

Communicable Diseases.—For the month of December there were reported to the State Board of Health 271 cases of diphtheria in 28 counties, with 35 deaths; 222 cases of scarlet fever in 32 counties, with 15 deaths; 426 cases of smallpox in 29 counties, with 1 death, and 120 cases of typhoid fever in 27 counties, with 31 deaths.

Acquitted.—In the case of Drs. Christopher C. Kesner and Gilbert G. Kesner, Leroy, charged with criminal carelessness in administering chloroform to and in performing an operation on Mrs. M. Short, the county attorney dismissed the suit, January 13.——Dr. E. P. Chase, Shawnee, charged with killing John Cahill, Aug. 22, 1904, was found not guilty, January 15.

New Hospitals.—The Salina Hospital and Training School for Nurses has been incorporated by Dr. William H. Winterbotham, Nathan D. Tobey, W. Scott Harvey, James R. Crawford, Manuel J. Brown, J. Harvey Winterbotham, Howard N. Moses, Andrew G. Anderson, Francis G. Lagerstrom, Edwin R. Tuttle, George Seitz and O. R. Britain. The staff is made up of the stockholders, but all licensed and ethical practitioners may send their cases to the hospital and attend them.——The new Arkansas City Hospital was opened for patients January 2.

KENTUCKY.

Senior Student Dies.—Hugh Adams, Madisonville, a senior student at the University of Nashville Medical Department, died January 16 at his home from tuberculosis, after an illness of a year.

Exonerated for Shooting.—Dr. Walter B. Gossett, Louisville, accused of unjustifiable assault on Dr. Henry B. Green and with shooting him twice, Nov. 7, 1904, was acquitted by a jury in the Circuit Court, January 19.

Smallpox Warning.—The State Board of Health estimates that in seven years there have been 25,000 cases of smallpox in the state, with 300 deaths, with a direct and indirect money loss to the commonwealth of $2,000,000, all of which might

have been avoided and lives saved had vaccination systematically been practiced.

Personal.—Dr. Clyde Brady, Greenup, has been appointed an interne at the City Hospital, Louisville, succeeding Dr. William Fullbright, resigned.——Dr. William D. Powell, Harrodsburg, suffered a fracture of the clavicle and fractures of three ribs in an accident January 13, in which he was thrown from his buggy to the frozen ground.——Dr. Harry A. Davidson, Louisville, has been elected professor of physiology, embryology and chief of the gynecologic clinic in the Hospital College of Medicine.——Dr. Frederick G. Larue, Smithland, physician of Livingston County, fell and fractured his scapula and arm, January 11.

Railroads Will Clean Cars.—The controversy between the State Board of Health and the railroads of the state, in which it was claimed that the passenger cars were so superficially cleaned that they were common carriers of disease, has ended in the acceptance by the railroads of the following rules regulating the cleaning and care of cars used in the state, which have been drawn up by the board, and which will at once go into effect:

All day coaches engaged in regular traffic shall be thoroughly cleansed after each trip at such points as facilities for the same have been provided. In no case shall such cleansing be less frequently performed than on every third day of use. In such cleansing, all rugs, mattings and upholstered seats and back rests, when practicable, shall be removed from the coach to the open air for mechanical cleansing, and be exposed to sunlight when the prevailing meteorological conditions will permit.

All interior surfaces in coaches are to be mopped, scrubbed or cleansed at intervals of not more than ten days, with solutions of mercury bichlorid, carbolic acid, tricreosol or other disinfecting preparations preferred by any corporation, and approved by this board as to ingredients and strength.

Spittoons are to be provided in numbers of not less than one for each seat in all smoking cars and toilet rooms, and one at each end of all other day coaches, and in all waiting rooms. Placards provided by this board shall be displayed at each end of all such coaches and in all waiting rooms, indicating the importance of using the spittoons, and it shall be unlawful for any person to spit on the floor or platform of any railway car, or other public conveyance or on the floor of any waiting room or platform in any station or depot.

All coaches of any kind in which an acute infectious disease has been carried shall remain closed and unoccupied after such person has been removed until it has been thoroughly cleansed and disinfected by the use of formaldehyde gas in quantities of not less than forty fluid ounces of formalin to each coach. All day coaches in regular use for through travel are to be disinfected after cleansing by some method approved by this board at intervals of not more than ten days.

All toilet rooms, water closets, urinals, spittoons and toilet appliances are to be scrubbed with soap and hot water and disinfected with formalin, or other approved method, after each trip's use, and shall be kept as clean as possible when on the road, and all similar rooms and in stations shall be cleansed daily in the same way, and when vaults or surface receptacles are used in stations these shall be disinfected daily with fresh lime.

All preceding regulations in regard to cleanliness and disinfection shall apply equally to sleeping, dining, buffet and parlor cars used in the service of the public.

All blankets, curtains and hangings used in sleeping cars shall be exposed to superheated steam, or other means of disinfection approved by this board at intervals of not more than ten days, and all mattresses shall be so treated at intervals of not more than sixty days.

MAINE.

Two-Thirds Insured.—In the fire at Brunswick, January 18, Dr. Goldbridge G. A. Stetson suffered loss amounting to $750, of which $500 was covered by insurance.

Bequest to Hospitals.—Macy S. Cope, Brookline, Mass., left by will $10,000 to Maine hospitals for free beds for patients from Washington County and specially from East Machias, his native town.

Epidemic Spinal Meningitis.—A camp of thirty lumbermen at Dover has been attacked by spinal meningitis. Five cases have occurred and three patients have died. The State Board of Health has assigned Dr. Galen M. Woodcock, Bangor, to investigate.

Eastman Sentenced.—Dr. Charles A. Eastman, Old Orchard, found guilty last July of manslaughter by an unlawful operation, withdrew his exceptions and was sentenced to be imprisoned one year at labor in the Alfred jail, the sentence to begin January 3.

MARYLAND.

Will Increase Medical Staff.—The medical staff of the Peninsula General Hospital, Salisbury, will be increased to include all the members of the local medical associations in Wicomico, Somerset and Worcester counties.

Personal.—Dr. Daniel P. Fahrney had a stroke of paralysis at Hagerstown, January 25.——Dr. Charles A. Wells, Hyattsville, who has been in active practice for the past 42 years, has retired to enjoy the fruits of his professional labors. Since retiring he has been elected president of the First National Bank of Lander, president of the Maryland Title Insurance and Investment Company, and president of the Maryland House of Correction.

Sheppard and Enoch Pratt Hospital Report.—The thirteenth annual report shows that 114 were admitted, 113 discharged and 105 remained under treatment at the end of the year. By the great fire last February thirteen pieces of the hospital's property were destroyed, and although the trustees had safeguarded their income by rental insurance, there will be a temporary impairment of income. Dr. Stewart Paton, who had been director of the hospital laboratory since 1899, went abroad in June and has since resigned, and Dr. Clarence B. Farrar has been made assistant physician and director of the laboratory. Dr. James H. Randolph of Florida was appointed clinical assistant, Dr. Chinn resigning to engage in private practice. Early in the summer the trustees authorized Dr. Brush to plan and equip apartments for hydrotherapy. Rooms, accordingly, were selected in the basement of one of the wings and the apartments will soon be ready for use.

Baltimore.

Osler Memorial Number.—The *Maryland Medical Journal* is preparing to publish an "Osler Memorial Number," June 1.

Personal.—William F. Frick, the founder and benefactor of the Frick Medical Library of the Medical and Chirurgical Faculty, died here January 26, aged 87.——Dr. S. Weir Mitchell delivered a lecture on "Lecturers," at Johns Hopkins, January 27.——Dr. Louis McLane Tiffany has gone to Florida on a hunting and fishing trip.

Hospital Report.—The annual meeting of the South Baltimore Eye, Ear, Nose and Throat Hospital was held January 25. During the year 2,065 patients were treated, white 1,917, colored 148; 10,878 visits to hospital and dispensary were made; 643 surgical operations were performed. A new site has been purchased for $13,000, consisting of a lot 90 by 200 feet, improved by a large brick residence.

The Dispensary's Work.—At the annual meeting of the board of directors of the Northwestern Dispensary the secretary reported 8,031 new patients, namely, 4,230 white and 3,801 colored; 1,166 patients were visited at their homes, and the total number of patients treated was 20,346. In the eye department 236 operations were performed; in the ear department, 51; in the nose and throat department, 30; in the surgical department, 134, and in the gynecologic department, 950. The following officers were elected: President, Dr. Arthur Wegefarth; secretary, Dr. Alexander D. McConachie; treasurer, Mr. William J. Klug; executive committee, Drs. A. D. McConachie, Frank A. Persohn and J. F. Travers.

MASSACHUSETTS.

Half Have Public Water Supply.—The State Board of Health has reported to the state senate that 172 of the 333 cities and towns of the state have now public water supplies.

Medical Inspection of Schools Demanded.—Another bill has been introduced into the state senate which authorizes the State Board of Education to provide medical inspection in all schools, such as is now provided by many cities and towns.

Brigham Will Valid.—The Supreme Court of the state has approved the validity of the will of Peter Bent Brigham, whose estate now amounts to $6,000,000, and unless the heirs carry the case to the United States Supreme Court this money will soon be applied to found and maintain a hospital for the poor, according to the terms of the will.

Medical Student Dies.—The dangers of medical practice or even study are exemplified in the sudden death of Joseph H. Converse, a student of Harvard Medical School. In the course of his work he exposed himself to cerebrospinal meningitis at the Boston City Hospital and within thirty-six hours of the first appearance of symptoms died from the disease.

Dispensary Report for 1904.—Reports from the 14 district physicians and the house staff of the Boston Dispensary shows that 93,578 patients were received at the dispensary during 1904, and 19,977 visits made at houses. They cordially commend the work of the nurses of the Instructive District Nurses' Association who work under them. Urgent need of new buildings is felt and efforts are being made to raise $100,000 for this purpose.

Embalmed Steak.—Six market-men in Boston were each fined $100 for selling hamburger steak which had been treated by preservatives. Their conviction was based on investigations of Dr. Harrington of the State Board of Health, who detected sulphite of soda. Experiments made by feeding cats with meat so preserved demonstrated marked degenerative disease of the kidneys and implies that this form of adulteration may be largely responsible for Bright's disease.

Would Abolish Noise and Smoke.—The topic of the annual meeting of the Association of Massachusetts Boards of Health, January 27, was "Noise." Prof. E. S. Morse read a paper on "Unnecessary City Noises;" Dr. Philip Coombs Knapp one on "The Effect of Noises on the Weak and Nervous," and Dr. James J. Patnam one on "A Comparison of the Different Sorts of Noises in Regard to Their Injurious Effect on the Nervous System." Strong resolutions were passed approving the bills now before the legislature for the abatement of the smoke nuisance in the metropolitan district.

Another Leper in Boston.—Another case of leprosy has been detected in Boston and the patient is quarantined on Gallop's Island. He is a Chinaman who has until recently been living in Newburyport. This makes four cases under care of the State Board of Health, three of whom, by courtesy of the Boston Board of Health, are quarantined on Gallop's Island, the fourth being in Harwich. The board has abandoned its plan to build a leper hospital on Cape Cod and has filed a petition with the state senate asking for a resolution calling on Congress to establish a national leprosaria.

Long Island for Chronic Diseases.—Dr. William T. Councilman of Harvard Medical School proposes that Long Island, in Boston harbor, be devoted exclusively to the care of chronic cases of disease. There is at present on the island a hospital of 300 beds. By removing the paupers now housed on the island their dormitories could readily be remodeled into wards to care for 400 other chronic invalids, and additional buildings erected and maintained at moderate expense. The main purpose of this change would be to furnish some adequate care for tubercular patients, a class now almost wholly neglected by the city authorities.

Milk Inspection Efficient.—To fill the place of Dr. Charles Harrington, who has succeeded Dr. Samuel W. Abbott as secretary of the Massachusetts State Board of Health, James O. Jordan has been appointed inspector of milk for Boston. So efficient has the work of this department become that there are a number of places in the city where milk comes by the carload daily, and where only a sample shows more than the 500,000 bacteria per c.c. allowed by the law, which went into force last June. Repeated warnings have been sent out and from this time on prosecutions will be started against violators, whether contractors, pedlers or shop keepers.

Deaths of the Last Fourteen Weeks.—Boston had during the ten weeks ended January 14, 2,060 deaths reported to the Board of Health, as against 2,077 during the same period a year ago, and an average death rate of 17.42 per 1,000 per annum. The report for the last week in 1904 was unusually low, as only 169 deaths occurred as compared with 231 last year, a rate of only 14.35 per 1,000. During this period of ten weeks there were reported 459 cases of diphtheria, with 45 deaths; 238 of scarlet fever, with 11 deaths; 145 of typhoid fever, with 31 deaths; 81 of measles, with 3 deaths, and 403 of tuberculosis, with 241 deaths. There were 322 deaths from pneumonia, 7 from whooping cough, 247 from heart disease, 82 from bronchitis, and 32 from marasmus. Of the fatalities 357 occurred in infants under 1 year old, 461 in those under 5 years of age, and 537 in individuals over 60.

NEW JERSEY.

Physician Injured.—Dr. Harry H. Sherk of Camden was severely injured as the result of his carriage colliding with an automobile, January 25.

To Combat Lodge Practice.—The physicians of Trenton have organized in order to break up the practice of treating lodge members and other organization people at contract rates. This method of treatment has become so general in Trenton as to warrant the step thus taken.

Hospital Report.—The annual report of the Camden City Dispensary shows that during 1904 1,266 patients were treated in the dispensary, 344 cases were treated at home, 1,933 visits were made to the dispensary, and 1,861 visits were made to residences; 10,664 prescriptions were dispensed.

Medical Society Election.—At the annual meeting of the Gloucester County Medical Society the following officers were elected: Dr. E. Mortimer Duffield, Glassboro, president; Dr. C. Frank Fisler, Clayton, vice-president; Dr. George E. Reading, Woodbury, secretary and treasurer, and Dr. W. Grant Simmons, Swedesboro, reporter.

NEW YORK.

Report on Niagara River Water.—Dr. Walter A. Scott, health officer of Niagara Falls, reported 288 cases of typhoid fever in the last year. Of this number 29 died of the disease. Of 266 medical cases in the Memorial Hospital 156 were typhoid fever. He classed Niagara River water as unfit to drink.

Stony Wold Sanatorium.—At the annual meeting of the officers of this sanatorium, which is located at Lake Kushaqua, in the Adirondacks, and was incorporated for the treatment of incipient tuberculosis of women, young girls and children, it was reported that 131 cases had been cared for since 1901, some staying over a year. It is the object of the institution to reach self-respecting persons who do without treatment rather than seek aid. There is the usual complaint that there are more to be cared for than present facilities can accommodate.

Care of Crippled and Deformed Children.—The fourth annual report of the New York State Hospital for the Care of Crippled and Deformed Children for the year ended Sept. 30, 1904, gives the following classification of diseases: Hip-joint disease, 16; white swelling, 3; major deformities of infantile paralysis, 5; Pott's disease of the spine, 4; congenital dislocation of the hip, 5; bowlegs, 2, and clubfoot, 7. Of these patients 17 were discharged; 5 of them were cured, 7 much improved, 3 as improved, 2 unimproved. There remained 25 in the hospital; of these 1 has congenital hip dislocation, 11 have hip-joint disease, 4 Pott's disease, 2 white swelling of the knee, 4 deformity from infantile paralysis, 2 bowlegs, 1 case of clubfoot. Of these patients 9 are girls and 16 boys. Out of the 42 cases treated 28 came from counties outside of New York and Queens. A new hospital is to be built at West Haverstraw, Rockland County, to cost $50,000, on a site of 50 acres overlooking the Hudson River.

Bills Before the Assembly.—Among the bills before the legislature are the following: A bill prohibiting the sale of proprietary medicines in the state, unless an analysis or formula specifying ingredients contained is printed on the label of the bottle or package. False analysis or failure to place formula on the outside of package is made punishable by a fine of not less than $50 nor more than $500, or by imprisonment of not less than one month nor more than six months. A bill providing for the establishment of a hospital for the treatment of habitual drunkards and victims of opium, chloral, cocain and other narcotics in New York City. This new hospital is designed to take the place of the alcoholic ward at Bellevue Hospital. A bill providing for an investigation into the purchase of a farm at Comstock, Washington County, as a site for the new State Hospital for the Insane and for which an exorbitant price was paid. It calls for the enactment of a law that will protect the treasury and its charitable and philanthropic interests from future injurious contracts and purchases. Senator Elberg again introduced his bill to abolish the office of coroner in New York City. This bill has been drawn up by Drs. Stephen Smith, Harry R. Purdy, E. Eliot Harris and James Taylor Lewis, counsel for the State Medical Association. It has been submitted to and approved by the legislative committee of the New York State Medical Association. The present coroners' physicians may become members of the new board of medical examiners under the civil service rules. The board is to be headed by a chief medical examiner, who will be directly responsible to the health commissioner for the work of the board. The duties of the board will be strictly those of physicians, leaving the legal and suspicious cases to be dealt with by the district attorney's office. This bill provides that a full report of each case must be sent at once to the district attorney's office, which will bring such cases as warrant it before a city magistrate. At present a coroner may be taken from any profession or trade. The members of the proposed board will have to prove their fitness by passing a rigid civil service examination. The recent arrest of Coroner Jackson, charged with having offered a bribe of $200 to one of the assistants of the district attorney if he would so shape a case of abortion that it could not be presented to the grand jury, and the defendant would have to be discharged by the coroner, illustrates how the office may be abused at present and may aid the cause of this bill, which has been defeated on two previous occasions.

Buffalo.

The Boy Wonder Again in Trouble.—Anthony Weichert, known as "Antonius the Boy Wonder," recently released from the penitentiary having served one year for conspiracy in defrauding people by promising to heal by the laying on of hands, etc., was rearrested on the charge of practicing without a license and remanded to jail.

Personal.—Dr. Frederic C. Busch resigned as assistant surgeon of the Sixty-fifth Regiment, N. G. N. Y., and Dr. Marshall Clinton was appointed to take his place.——Dr. Edward C. W. O'Brien, surgeon to the Fire Department, is critically ill with influenza.——Dr. James E. King, instructor in obstetrics, University of Buffalo, will spend a year in New York City in study.

December Statistics.—The monthly report of the Department of Health for December shows an annual death rate of 15.06 per 1,000. The principal causes were consumption, 39; measles, 12; septicemia, 6; typhoid fever, 8; debility, 44; alcoholism, 5; cancer, 20; apoplexy, 25; dementia, 7; meningitis, 7; valvular disease of the heart, 33; pneumonia, 68; gastro-enteritis, 6; nephritis, 36, and violence 29.

New York City.

Research Chemical Laboratory.—The department of health has decided to establish a research laboratory in the new laboratory building which is being erected where food and drugs will be examined by competent men and studies in purity made which will be of universal interest.

Anti-Spitting Brigade.—At a mass meeting of Brooklyn boys, designed as a missionary meeting to spread information relative to the spread of tuberculosis, an anti-spitting brigade was formed, with Dr. Darlington's approval, who announced on this occasion that Brooklyn was to have a new health department building.

Diphtheria on Staten Island.—There were 40 cases of diphtheria reported from Elm Park in a little over twenty-four hours, and an epidemic is feared. One public school has been closed. The health authorities say that a serious epidemic need not be feared as at this time last year there were 97 cases reported in the same period.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended January 20, 1905, 404 cases of tuberculosis, with 153 deaths; 360 cases of diphtheria, with 40 deaths; 289 cases of scarlet fever, with 14 deaths; 194 cases of measles, with 4 deaths; 179 cases of varicella; 50 cases of typhoid fever, with 12 deaths, and 30 deaths from cerebrospinal meningitis.

Effects of the Blizzard.—As a result of the severe weather there were six deaths from exposure and twenty street accidents, three of which were fatal. Cases of frostbite were treated by the hundreds at the various hospitals. The ears and hands of nearly two thousand of the street cleaners were frozen. The lobby of the Metropolitan Opera House was converted into a species of emergency hospital, where for a time policemen escorted those suffering from frostbite.

Work of the Pneumonia Commission.—Four additional workers have been added to the pneumonia commission. Dr. Norris of Bellevue has begun a series of experiments to determine how commonly the pneumonia germs are present in the air passages of persons who have died of some other disease and whether they are present in the air passages of persons who are killed when in good health. They are also experimenting in fifty different public school buildings in this city on methods of cleaning and the dust danger.

Not Pneumonic Plague.—The Red Star steamer *Vaderland* was sent back to quarantine by Dr. Doty, health officer of the port, because eleven deaths occurred in one compartment during the passage. The deaths were ascribed to pneumonia, but it was feared that the disease might be pneumonic plague, although this disease has heretofore only come from India. Bacteriologic examination failed to show the presence of anything other than ordinary pneumonia, and after thorough disinfection the passengers will be allowed to land.

Radium Cure Swindle.—The New York County Medical Society, with the assistance of a woman detective, have succeeded in having "Dr." H. H. Kane and his associates, "Drs." William H. Hale and William F. Horton, arrested and indicted on the charge of having swindled a carpenter out of $10,000. They claimed that his life could be saved by radium, and pretended to have used that drug. The alleged radium tube was analyzed at Lederle Laboratory, and found to contain ginseng, strychnin and a few other drugs found in most tonics, but no radium. There are a number of cases against these men by persons who have been swindled out of sums ranging from $100 to $2,500. They have been practicing under state licenses. The counsel for the county medical society secured an injunction restraining banks holding deposits of the men from paying out any money, and it is probable that some of the victims may be reimbursed.

Hospital News.—The proceeds of the German Charity ball, amounting to about $12,000, will be distributed among the German hospitals of the city.——Isaac Guggenheim has contributed $1,000 to Sydenham Hospital and has agreed to give monthly an amount equal to such sums as the board of directors succeed in raising through gifts up to and including the sum of $10,000 each year.——The plans have been filed for the new building of the Manhattan Eye, Ear and Throat Hospital, which is to be erected in East Sixty-third Street. The building will be twelve stories high, will accommodate about four hundred ward patients and fifty private patients. A feature of this hospital is its postgraduate department.——The New York Foundling Hospital has lost its case against eighteen citizens of Clifton, Ariz. The authorities of the hospital endeavored to recover children who had been placed in families in Phoenix, Ariz., by three sisters of charity. The Supreme Court has unanimously decided that as the children have homes, their best interests have been subserved. The attorneys for the petitioner preferred an appeal to the United States Supreme Court.

PENNSYLVANIA.

Personal.—Dr. Oscar Kniffler, Pittsburg, has moved to Göttingen, Germany, and will eventually settle in Wiesbaden.——Dr. Reinoehl Knipe, Norristown, has been re-elected physician to the Montgomery County prison.

Large Sum Asked for Charity.—The State Board of Charities in its biennial report recommends that $9,406,923.75 be appropriated to the state, semi-state and private institutions in the state for 1905 and 1906. The report stipulates that $7,227,804.10 shall be applied for maintenance, and that $2,179,119.65 for building. The total amount applied for by the various institutions throughout the state was $15,033,462.09, of which $8,947,264.34 was for maintenance and $6,086,197.75 for building. The board also recommended that $2,000,000 be appropriated for the maintenance and clothing of the indigent insane for the two years beginning June 1, 1905; that $50,000 be appropriated for the erection of an institution for the criminal insane on the grounds of one of the existing penitentiaries. In all 119 asked aid and 17 applications for assistance were disapproved by the board.

Crusade of Education Against Consumption.—The free lectures on consumption to be delivered under the auspices of the Henry Phipps Institute are now going on. The movement also will be started in the towns circumjacent to Philadelphia. Dr. Horace Cairncross of the Phipps Institute lectured before the Glassblowers' Union in Woodbury, N. J., on this subject, January 27; Dr. Ward Brinton lectured to the textile workers on "The Home Treatment of the Disease," January 28, and Dr. Daniel J. McCarthy delivered a lecture on "Tuberculosis" in Oil City, February 1. Dr. McCarthy also lectured on this subject in the Deaconesses' Home, Philadelphia, January 25. Dr. Lawrence F. Flick of the Phipps Institute said that the institute is for the study, treatment and prevention of tuberculosis, and these lectures constitute one part of the educational side of the work. The lectures, he said, were requested by the lay organizations and this shows an enlightened interest in the subject, and that people are looking for truth in the matter.

Philadelphia.

Malpractitioner Sentenced.—Mrs. Elizabeth Ashmead, who was committed to jail by the coroner March 30, charged with malpractice, and who was recently found guilty, was sentenced on January 26 to three years in the penitentiary from date of commitment.

New Society Officers.—The Philadelphia County Medical Society, at its annual meeting January 18, elected the following officers: President, Dr. James M. Anders; vice-presidents, Drs. M. Howard Fussell, Alfred M. Eaton, Hilary M. Christian, Franklin Brady and Milton B. Hartzell; secretary, Dr. William S. Wray; assistant secretary, Dr. Ross H. Skillern; treasurer, Dr. Collier L. Bower, and censor, Dr. Judson Daland.

Personals.—Dr. Samuel Bolton was thrown from his sleigh in a runaway and sustained a slight concussion of the brain. He is slowly recovering.——Dr. John H. Jopson was recently elected to the surgical staff of the Presbyterian Hospital.——Dr. Milton J. Rosenau of the United States Public Health and Marine-Hospital Service, and director of the Hygienic laboratory at Washington, delivered a lecture at the Medico-Chirurgical College January 27 on "Tropical Anemia, with Special Reference to the Hookworm in Tropical Malaria."

Health Report.—The total number of deaths reported for the week aggregated 499. This is a decrease of 20 from those of last week, and a falling off of 63 from the corresponding period of last year. The deaths from pneumonia numbered 67, an increase of one over the previous week. There was a notable decrease in the number of diphtheria cases. In all 62 were reported, 33 less than last week. The principal causes of death were: Typhoid fever, 11; tuberculosis, 40; cancer, 12; apoplexy, 20; heart disease, 58; acute diseases of the respiratory tract, 155; enteritis, 23, and Bright's disease, 46. The total number of contagious disease cases aggregated 207, with 21 deaths, as compared with 231 cases and 24 deaths for the preceding week.

Free Public Lectures on Hygiene.—The Department of Medicine of the University of Pennsylvania has announced a series of free public lectures on the subjects of hygiene and medicine of general interest to practitioners and the public, to be delivered on Monday afternoons in the medical laboratories. This course was arranged especially for the fourth-year students, but invitations to attend the lectures are extended to the members of the medical profession of the city. Dr. Leonard Pearson, dean of the veterinary department, will deliver the first two lectures, February 6 and 13, on "Milk Supplies of Cities." On February 20 Dr. Jay F. Schamberg will speak on "Vaccination," and on February 27 will give a demonstration on the subject of "Eruptive Fevers." On March 6 and 13 Dr. Edward C. Kirk, dean of the dental department, will speak on "The Medical Relationship of Certain Dental and Oral Disorders." On March 20 Dr. A. P. Francine will speak on "The Restriction and Prevention of Pulmonary Tuberculosis." On March 27 Dr. R. Tait McKenzie, director of physical education at the university, will speak on "The Therapeutics of Exercise." Dr. Joseph Sailer will deliver the two closing lectures April 3 and 10 on "Hydrotherapy."

Course in Public Health.—The University of Pennsylvania will introduce into its curriculum, beginning October 1, a course in public health which will include instruction under the following headings:

Sanitary Engineering.—Including the subject of water supplies, sewerage systems, street cleaning, disposal of waste, etc.

Sanitary Legislation.—A study of the movement for sanitary reform and of the laws enacted relating to public health, and the methods of enforcement employed in Great Britain and the United States.

Inspection of Meat, Milk and Other Animal Products.—The methods of preparation and preservation of the same, the conduct of dairies, creameries, etc., and demonstrations of the diseases of animals transmissible to man.

The Sanitary Engineering of Buildings.—Including demonstrations of systems of heating, ventilation, plumbing and drainage, the study of plans, etc.

Social and Vital Statistics in the United States.—An examination of statistical methods and their results, with special reference to vital statistics and to city populations.

Practical Methods Used in Sanitary Work.—Including water, air and milk analyses, studies in ventilation and heating, investigation of the soil, methods of disinfection, sterilization, etc. (This is purely laboratory instruction.)

General Hygiene.—As applied to the community, including lectures on the causation of disease—exciting and predisposing, methods of prevention—including isolation, quarantine, natural and acquired immunity, protective inoculation, vaccination and the antitoxic state, methods of house disinfection and the means employed, suggestions for the organization of sanitary work, the influence of water supplies and sewage disposal on the public health, etc.

Personal Hygiene—Including the physiology of exercise, the adaptation of exercise to the various physical requirements, the use of exercise for the prevention and correction of deformities, the methods of examination and record keeping, the routine physical examination of growing children and the relation of air, food, bathing, etc., to health and development; the hygiene of the school room.

SOUTH DAKOTA.

Hospital Report.—Since its foundation in 1900, St. Luke's Hospital, Aberdeen, has cared for 845 in-patients, with 25 deaths.

Law Regarding Vital Statistics.—The legislature of South Dakota has passed a bill providing for the collection, preservation and publication of census and vital statistics and appropriating money for carrying this into effect. This is the first law in the state relating to vital statistics.

Compulsory Reports Recommended.—The Black Hills District Medical Association, which met at Deadwood, January 8, for its annual session, has proposed a bill advocating the compulsory report of all births and deaths under a penalty of $100 for failure, the physician making reports to receive a fee of 25 cents for each birth or death so reported. The following officers were elected: Dr. Adelbert H. Bowman, Deadwood, president; Dr. C. W. Hargens, Hot Springs, vice-president; Dr. Felix E. Ashcroft, Deadwood, secretary; Dr. Frank S. Howe, Deadwood, treasurer, and Dr. John W. Freeman, Lead, delegate to the state medical association.

GENERAL.

Yellow Fever on Naval Ship.—The U. S. cruiser *Boston* arrived at Panama from coast ports, January 25, with yellow fever on board. Two men are reported to have died, but no new cases have occurred beyond the seven reported first. The ship has been ordered north because of this occurrence.

Yellow Fever at the Isthmus.—The canal officials are reported to be taking extra measures to prevent the spread of yellow fever at the isthmus. They have a large problem to deal with, as the laborers and skilled employes, including women, who are arriving from the United States, are for the most part inexperienced and careless concerning tropical life and its dangers.

Dr. Kelly Asks for Material for Study.—Dr. Howard A. Kelly, 1418 Eutaw Place, Baltimore, writes that he is studying membranous dysmenorrhea, and says that since he is greatly in need of material, he will be indebted to any physician who will mail him casts of the interior portion of the uterus discharged by dysmenorrheic patients. The fresh specimen should be put in a bottle containing a 10 per cent. solution of formalin.

Pneumonia Rates of Chicago and New York.—The bulletin of the Department of Health of Chicago, compares the pneumonia mortality in New York and Chicago. For years New York has had a lower pneumonia rate than Chicago, but the recent increase there has temporarily reversed the conditions. In Chicago, in November, 1904, 260 deaths were reported from pneumonia, a daily average of 8.6. In New York, for the same month, 802 deaths from pneumonia were reported, a daily average of 26.7. In Chicago, during December, 451 were reported, a daily average of 14.5, while in New York 1,452 were reported, a daily average of 46.8.

Dr. Cushny Goes to England.—Dr. Arthur R. Cushny, for the past twelve years professor of pharmacology in the Department of Medicine and Surgery of the University of Michigan, has been made professor of pharmacology in the Medical Department of University College, London, as was announced in THE JOURNAL last week. Dr. Cushny graduated in arts and in medicine in the University of Aberdeen and then took up the special study of pharmacology with Professor Schmiedeberg at Strassburg, in whose laboratory he became privat docent. When Professor Abel left the University of Michigan in 1893 and went to John Hopkins, Dr. Cushny, whose research work had already attracted attention on account of its high degree of excellence, was called to Michigan to fill the chair of pharmacology. During his twelve years of residence in this country he has made many valuable original contributions to the science of his special subject. Some of his most important papers have been those bearing on the action of digitalis, caffein, spartein, saline cathartics and the atropin group. He has recently contributed to the *English Journal of Physiology* a series of researches on the physiology of, and the effect of medicinal agents on the action of, the kidney. He has made valuable contributions on the physiology of the mammalian heart and the interpretation of pulse tracings. His text-book on pharmacology received immediate recognition, and has already passed through several editions. In his departure from this country, America loses and England gains one of the most thorough scientific investigators in medical science.

CANADA.

Tuberculosis in Montreal.—Last year there were 634 deaths in Montreal from tuberculosis. It is expected that in the next few years the deaths from this disease may be materially decreased, owing to the work of the Montreal League for the Prevention of Tuberculosis, and to the adoption of stringent measures against people spitting on the streets and in public places.

An Association of Ex-House Surgeons of Toronto General Hospital.—Speaking of the reunion of the house staff of Toronto General Hospital of 1892-1893, Dr. Charles O'Reilly, the medical superintendent, said that since 1876 there had been 220 house surgeons in that institution, and of this number in the twenty-eight years but eight had died. The work of organizing an association of ex-house surgeons in connection with this hospital is progressing.

Typhoid Fever in Winnipeg.—The health authorities state that 135 deaths from typhoid fever were reported in Winnipeg during 1904, and Winnipeg has an estimated population of 75,000. The total deaths from all causes numbered 1,436. It is estimated that during the year over 2,000 cases of typhoid were reported. One of the Winnipeg newspapers counted 226 deaths reported from typhoid fever during 1904, as shown on the official register. This would make a rate of 3.01 deaths per 1,000 of population from typhoid, while the figures of the health authorities would make a rate of 1.8 per 1,000.

Personal.—Dr. J. F. W. Ross, Toronto, is spending the remainder of the winter in Southern California.——Dr. J. N. E. Brown, secretary of the Gold Territory, Dawson, has left Toronto to spend the next three months in Southern California.——Dr. George R. McDonagh, Toronto, has gone to the south of Italy, to remain three months.——Dr. W. H. B. Aikins, one of the editors of the *Canadian Practitioner and Review*, will spend the next three months in Vienna.——Dr. W. J. O. Malloch, Toronto, demonstrator of anatomy in the Medical Faculty of Toronto University, leaves March 1 for a two years' course in England.——Dr. Glen Campbell, Vancouver, B. C., has gone to Europe for a year's study.——Dr. Barrett of Dawson is visiting the hospitals of New York.——Dr. G. H. Manchester, medical superintendent of the New Westminster (B. C.) Insane Asylum, will resign and a new superintendent will be appointed March 1. Dr. W. T. Williams of St. Thomas, Ont., will go to the Bahama Islands shortly, having been appointed quarantine officer and medical health officer for the island of Inagua.

FOREIGN.

German Naturforscher Congress.—The German Naturforscher Congress is to meet this year at Meran, September 24 to 30.

Vaccination in the Ottoman Empire.—On April 18, 1904, a law went into force in Turkey making vaccination and revaccination compulsory.

French Congress of Climatotherapy.—The second French Congress of Climatotherapy and Urban Hygiene will convene at Arcachon April 24, and will adjourn to Pau for the closing meeting, April 29. The French railroads allow half-fare rates to members and their families. Dr. Dechamp, Villa Tibur, Arcachon, has charge of the arrangements.

Hirschberg's Anniversary.—Prof. J. Hirschberg of Berlin, the well-known ophthalmologist, recently received a *Festschrift* from his friends and pupils on the twenty-fifth anniversary of his professorship. It contains a number of works by prominent ophthalmologists of various countries. One of the cabinet ministers and delegates from a number of scientific societies were present at the ceremony of presentation.

International Congress of Anatomy.—The international committee representing the foremost societies of anatomy in the world, met at Geneva, December 20, and made arrangements for the first international federative congress of anatomy. The date was appointed as Aug. 7 to 10, 1905, with Geneva as the place. Cristiani and Batelli of Italy are members of this committee. Romiti of Pisa is the official delegate.

Results of Antimalaria Campaign on Roman Campagna.—In the official annual report of the Red Cross, which has charge of this work, we note that 11,962 persons received prophylactic quinin treatment and only 67 exhibited primary malarial fever. There were 313 cases in which malaria recurred in persons formerly subject to it. This is a total of only 380 cases in one of the worst hotbeds of malaria in Italy.

Life Insurance of Children Forbidden in France.—The Académie de Médecine of France and the Société Royale de Médecine of Belgium have proclaimed the abuses liable to follow the insurance of the lives of infants and children. Communications were presented before these bodies showing the evil results of this custom, which seems to be widely prevalent in northern France. The French government has enacted a law which prohibits all insurance payable at the death of children under 12.

Opening of the Vegetarian Orphan Asylum.—Berlin declined the legacy left by Baron, a member of the law faculty at Bonn, for the erection and maintenance of a home for destitute children to be conducted on vegetarian principles. The city of Breslau offered to accept it, basing its acceptance on Flügge's statements that the small amount of meat which the poor are able to afford can be effectually substituted and surpassed by milk and eggs. The asylum is now complete and was recently inaugurated.

Campaign Against Irregulars in Germany.—The medical profession in Germany has been conducting a more or less well organized campaign against irregulars for the last few years. Germany has been made too hot for many of the latter, and recent letters from Switzerland complain that they are flocking into that country. We mentioned in these columns recently the bold attempt made by the irregulars located at Zurich to influence legislation to allow them a free hand. The matter was decided by popular ballot and the measure was defeated by a large majority. One of the most potent means used by the profession in Germany in their campaign is what they call "press committees." A number of the large cities now have these committees, and the one at Munich has been in operation since 1901. It was founded by Cramer's efforts, and consists of nine physicians, who are thoroughly posted and ready writers. Medical meetings, etc., to which the lay press was in the habit of sending a reporter, were written up by a member of the committee and copies were sent to the newspapers. The latter were urged to refer to the committee all copy relating to medical matters, dubious ads, etc., and the press clipping bureaus kept the committee posted on what might otherwise escape them. The newspapers consented to this arrangement, and co-operated in most instances with the committee. Excellent results have been obtained in the matter of swindling advertisements. Many of them were discontinued by the papers on the recommendations of the committee. Others that were still carried were accompanied by a warning in the editorial pages. The committee investigated the standing of irregulars and wrote them up for the papers, and when criminal or other proceedings were instituted against them the committee sent in articles discussing the case and emphasizing its instructive points. A member of the comtee was also appointed to attend the assemblies of irregulars, to join in the discussions and to report the meeting for the newspapers. Dr. Max Nassauer's detailed account of the work of the Munich committee was published in the *Aerztl. Vereinsbl. f. Deutschland*, 1903, No. 498. An epitome of it is given in the last *Prag. med. Wochft.*, accompanied by an urgent appeal from Kantor for the organization of a similar committee in Bohemia. The idea is for each town and county to form a network of similar committees to unite for a common campaign against irregular practices. The Munich committee did not hesitate to write up disparagingly the unethical advertising of one colleague, a lung specialist, and another who advertised his "ocularium" in an undignified manner. The prompt and solid organization of the profession in Munich when the troubles with the sickness insurance societies (*Krankenkassen*) were impending a year ago, was undoubtedly one of the results of the work of the press committee. The equally prompt acquiescence of the insurance societies in the just demands of their medical officers, forestalling their resignation, may likewise be attributed to the influence exerted on the public by the untiring labors of the press committees. The *Allg. med. Cent.-Ztg.* publishes each week the suits instituted against the irregulars throughout Germany. There are always at least two or three; they are brought for swindling advertisements or for cheating by selling medicines at prices altogether out of proportion to their cost, or for personal injury from their practices. The sentences are fines of from $10 to $300 and imprisonment for from a week to six months or even two years. The last issue brings an account of a suit brought by Dr. P. Manasse of Berlin against an editor, R. Gerling, who has championed the cause of the "nature healers," and at a public meeting at which Manasse was present, he denounced the medical profession, remarking that he considered the majority of physicians as capable of any crime, any treachery and any wickedness. The prosecuting attorney (*Staatsanwalt*) demanded the imprisonment of the speaker, as a money fine was not adequate punishment for such assertions. The defendant was sentenced to one month in prison and the costs of the suit, which were large, and he was ordered to publish the account of the proceedings in his own journal.

Correspondence.

Iodin-Carbon-Disulphid Inhalations in Respiratory Diseases.

COLUMBIA, ALA., Dec. 3, 1904.

To the Editor:—In the *New York Medical Journal*,[1] April 25, 1896, Drs. Stovall and Twitty report results from the use of iodin-carbon-disulphid inhalations in respiratory diseases. I have tested the remedy in my practice and offer the results to the profession in the interest of a subject which is closely related to the welfare of all classes of people. The profession is slow to accept new theories or methods of treatment, but this treatment has proved in my hands a most useful agent in combating the various laryngeal, bronchial and pulmonary disorders; and physicians elsewhere, after testing its merits, have spoken in unmistakable terms with reference to its practical value.[2]

Professor Coromilas,[3] at a meeting of the Chicago Medical Society, gave his conclusions, reached after treating a test series of 66 cases by the hypodermic administration of carbon disulphid. The results were eminently satisfactory, enabling him to use the word "specific" in estimating the value of the compound. The following is a summary of his investigations:

1. The disulphid of carbon as administered by him has no disagreeable results.

2. Because of its parasitic, antizymotic, antiseptic and inoffensive action, it is capable of penetrating all tissues and in this manner cures tuberculosis.

3. It has a strong action against the bacillus of tuberculosis.

4. It should not remain unknown, but should take its place in therapeutics as one of the specifics of our time, capable of doing immense service to suffering humanity.

While I am disposed to discredit the use of the word "specific," yet the professor's conclusions are practically identical with my own, as well as with those previously enunciated by Drs. Stovall and Twitty. There can be no doubt of the value of the hypodermic administration of this preparation as a means of impressing the system, but as the professor claims that the disulphid is strongly antagonistic to the tubercle bacillus, it would seem reasonable to suppose that inhalation would be the most direct method of application in phthisis pulmonalis. My colleagues in this city advance this argument, in writing on the subject, claiming, as they do, the superiority of the direct method by inhalation. In my own opinion the addition of iodin, as they suggest, adds very much to the therapeutic value of the remedy; this combination precludes its use hypodermically, and has an agreeable effect on the solution when used as an inhalant.

Because of the difficulty of performing intratracheal injections the services of a laryngologist are often required when this procedure is necessary.

It is not my intention to go into details appertaining to any particular phase of the subject, but rather to impress on the profession the great value of this new remedy, which, with hygienic measures, is of great assistance in battling against respiratory diseases. The physicians to whom I have referred as originators of the idea have given their experiences in detail in contributions to different journals, as well as having issued a pamphlet explanatory of the method. I will not consume time and space with clinical histories, but will say in conclusion that physicians who are interested in the treatment of respiratory diseases will do well to study closely this method of treatment, and that Drs. Stovall and Twitty will take pleasure in replying to any correspondence.

C. L. C. ATKESON, M.D.

[EDITOR'S NOTE.—Dr. Atkeson does not give instructions nor technic regarding the use of this preparation. To remedy this omission we repeat the description which was quoted from Drs. Stovall and Twitty in THE JOURNAL, June 13, 1896:

"We are quite positive that by deep inspiration the remotest recesses and apical caseations are reached. The good effects are manifest during the first day's trial, and the night cough which is so troublesome and exhausting is much improved; and this is among the first benefits derived. Expectoration is lessened in quantity and the quality is made decidedly better in a short time. The sulpho-carbon compound is put down as poisonous, and we have watched very closely for any untoward symptoms attributable to its inhalation, but, so far, have failed to note any objection to its use under proper precautions and directions from the physicians. About a 12 per cent. solution, or, more accurately, one of a dram of iodin to the ounce of disulphid, is what we have used in practice. (Later recommendation is as follows: The strength of the solution varies from 10 to 60 grains of iodin to the ounce, according to special requirements, deep-seated disease indicating a stronger percentage of iodin than does catarrh of the upper tract. The weaker solutions also admit of nasal inhalation as well as oral.) Owing to the solubility of rubber and kindred matter in the disulphid, it is rendered inadmissible as material for an inhaler, which should be made of glass preferably. A cheap, convenient instrument may be improvised by using a small test tube with a sponge in the bottom saturated with the liquid; it will be necessary to replace the sponge frequently, because of the corrosive action of the medicine. For lung and laryngeal treatment, the inhalation is to be made through the mouth with the instrument pushed far back, approximating the opening of the larynx. The frequency with which it may be used is variable according to the individual condition and effects; we may say, on an average, once every two hours during the day. The disulphid has a bad odor which is objectionable to some patients. We have experimented with a view to rendering it more agreeable and have made various additions and modifications, resulting with no advantage considerable enough to justify the use of anything additional, inasmuch as such a change might possibly lessen the practical value of the original formula. Menthol is perhaps the best harmless addition that we have attempted (15 grains to the ounce). We should be very glad if the profession would prove the efficacy of the treatment and report the results." Drs. Stovall and Twitty have since advised the use of the bent tube inhaler, known as the Giarth modification. They give the following directions for use: "The fluid is dropped to saturation on the gauze, avoiding using an excess; also being careful that it does not come in contact with the cork inserted in the end of the inhaler. When ready for use (mouth inhalation) hold the tube two or three inches from mouth, inhaling carefully, avoiding as far as possible the induction of violent fits of coughing which a too vigorous application of the fluid might produce. By beginning cautiously the patient will be more easily controlled and the sooner will become accustomed to its vigorous application. It is very necessary to know and to inform the patient that a few inhalations even may give rise to unpleasant sensations, such as vertigo, or fullness about the head, which should serve as a warning to stop inhaling until these sensations pass off. Usually the vertigo is only transient, and a few moments will witness a return to the normal state. As a rule, one can draw five or six deep inspirations, rest a short time and repeat. Unless the cough is too violent or other bad effects supervene, the patient may be allowed to repeat the inhaling act five or six times at one sitting. It is always advisable to have the patient in half reclining or sitting posture. Every four hours during the day is often enough, in the beginning, to take the treatment. As toleration is established, it may be advisable to use every two hours, if no contraindication presents itself."]

1. Drs. Stovall and Twitty: "Inhalations of Iodin and Carbon Disulphid in Tuberculous Pulmonary Disease."
2. E. g., Dr. Giarth: Philadelphia Med. Council, Aug., 1904.
3. Prof Coromilas, Athens, Greece: THE JOURNAL, Nov. 26, 1904.

Insane Wards in General Hospitals.

PITTSBURG, PA., Jan. 27, 1905.

To the Editor:—In his interesting description of the new City Hospital of Nuremburg,[1] Dr. Barker mentions that 31 of its 946 beds are allotted to insane patients. One could

1. THE JOURNAL A. M. A., Jan. 14, 1905.

wish that he had furnished some information as to just how this division of the hospital is equipped and how it is managed, for, in my opinion, the attempt to treat disease which exhibits "insanity" as a symptom or group of symptoms in a general hospital marks a distinct step in advance. It is an effort to follow out in practice the theory that "insanity" is a manifestation of sickness, as is headache or edema or convulsions or vomiting or paralysis, dependent, like any of these symptoms, on underlying bodily alterations. To treat "insanity" in a general hospital is an object lesson, to the profession and laity alike, of immense value. In no other way, I believe, is it so apt to be studied on a proper basis by physicians; and by no other method may we hope to do so much to combat the old idea of the laity that "insanity" is a curse or disgrace, and to teach them that it is one of many manifestations of bodily disease in which the brain shares. By no other plan are "insane" patients so apt to be brought early for hospital treatment. The plan has far more to commend it than that of pure psychopathic hospitals unattached to general hospitals, which by the laymen will doubtless be called "insane asylums" no matter how modern their methods, and to which the old-time stigmata will doubtless attach. For some ten years I have been one of the visiting physicians to the insane department of St. Francis Hospital of this city, and on the basis of this experience I have ventured the foregoing observations. I do not know of another general hospital in this country like St. Francis of Pittsburg with an insane department as an intimate part of a general hospital. I am convinced that much good would result if one or more hospitals in each large city of the country would provide wards (properly equipped, of course) for a few insane patients. Acute cases only should be taken. THEODORE DILLER.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

ANTIQUATED TEACHING IN MEDICAL COLLEGES.

PHILADELPHIA, Jan. 28, 1905.

To the Editor:—I have been much interested in the letter in THE JOURNAL, Jan. 28, 1905, p. 307. It is not necessary for the correspondent to make known his local habitation or his name. It is, indeed, a condition that confronts us, not a theory. Many a gray-haired college professor will recognize the picture, and say sadly, with Sir Andrew Aguecheek, "That's me, I warrant you." In the present rapid onward rush of scientific progress few, if any, teachers at the end of twenty years can represent the existing state of their science. The question, however, arises at once as to what constitutes up-to-date teaching. The charges that A. B. C. brings are not entitled to consideration unless itemized. It is easy for some junior to assert flippantly that "Dr. X. is an old fogy," and it is also easy to develop a spirit among students that will lead to murmurs against the senior teacher. Instructors, demonstrators and quiz teachers are brought into close personal relations with students and are often possessed of considerable personal magnetism. The desire to succeed to the chair may be very strong, and the medieval method of poisoning the "old man" being no longer available, the safer and often effective method of poisoning the minds of his pupils and his colleagues is carried out. The charge of the teaching being behind the times could be used to vacate the larger proportion of professional chairs. How many competent teachers of botany are still teaching that stamens and pistils are sexual organs? Yet the view is quite abandoned by many biologists. On the other hand, the periodic system in the classification of elements practically dominates chemistry to-day, yet Berthelot considers it as comparable in its absurdity to the views held by the alchemists. When I was a student at Jefferson College Dr. S. D. Gross, easily first among American surgeons, taught with great positiveness that soft and hard chancre are due to the same virus. He stood almost alone in this respect. His colleagues and his principal assistant knew his error, and knew the practical objection to the view, yet an effort to displace him on this account would have found very few supporters. I fear that from the very nature of the case your correspondent can not give us the data. The name and place, as I have said, are of no moment. We ought to have specific instances of shortcoming. Does the professor teach the uric acid theory of gout? Does he hesitate to accept the recent views as to the nature of the proteid molecule? Does he insist that some of the long-known vegetable alkaloids are as efficient as the popular coal-tar synthetics? You are right, Mr. Editor, in pointing out that the sore spot in A. B. C.'s college is in the weakness of the colleagues. What is the condition in a college when a respectful petition presented by students could lead to their expulsion? I fear that if the accused professor is not up-to-date in his science he is quite so in some of his business methods. It is not necessary to say that the college is not in Russia; in every large city in this country at least one representative of the type will be found. HENRY LEFFMANN.

GRATUITOUS SERVICES BETWEEN PHYSICIANS AND DENTISTS.

X. says that he attended a dentist's wife and that the dentist objected to the bill for services, claiming at first that the charge was too large and later claiming that it is improper for physicians to charge anything for services rendered dentists. X. says he can not find that any of the physicians in his city have ever been treated gratuitously by physicians or have been in the habit of rendering gratuitous services to dentists. X. asks for information. In some localities physicians and dentists render services to one another gratuitously. The usual custom is to give a discount. X. also details the operations, etc., included in the services referred to, and asks if his charges were not very moderate. We prefer not to express an opinion, but to leave this point to be decided on the basis of the custom of the profession of X.'s city, both as to scale of fees and as to discounts, etc., to the dental profession.

LICENSE TO PRACTICE IS PERMANENT.

HEBBARDSVILLE, KY., Dec. 27, 1904.

To the Editor:—Feb. 11, 1903, the State Board of South Dakota granted me license to practice medicine in that state. Since then they have passed some stringent laws. Have I the right to practice medicine under the license I hold without any further examination? L. O. JONES.

ANSWER.—Yes; although Section 22 of the medical practice act of South Dakota states specifically that the new act, which went into force March, 1903, is not applicable (among others) "to resident physicians and surgeons of this state regularly licensed and practicing in this state at the time of the taking effect of this act."

Marriages.

CHARLES H. SHERMAN, M.D., to Mrs. M. E. Herrington, both of Dallas, Texas, January 15.

BASIL M. TAYLOR, M.D., to Miss Cora Bartlette Corte, both of Greensburg, Ky., January 18.

HENRY T. BRAY, M.D., to Miss Elizabeth V. O'Connell, both of New Britain, Conn., January 11.

GEORGE F. PAINE, M.D., St. Louis, to Miss Dorothy Frye of Salida, Colo., at St. Louis, January 22.

GEORGE W. CROSBY, M.D., to Miss Rosa Hall, both of Sheboygan, Wis., at Milwaukee, January 16.

J. ALEXANDER ST. PIERRE, M.D., Three Rivers, Que., to Miss Blanche Barsalon of Montreal, January 26.

BERT RODENBAUGH, M.D., Barberton, Ohio, to Miss Grace Robinson of Youngstown, Ohio, January 3.

ROMEO RODERICK STEVENSON, M.D., Sioux Falls, S. D., to Miss Emilie F. Avery of Chicago, January 25.

WILLIAM A. BROCK, M.D., Leesburg, Ky., to Miss Sallie E. Nichols of Silas, Ky., at Lexington, Ky., January 18.

SETH MARION BILLINGS SMITH, M.D., Crandon, Wis., to Miss Elizabeth Porter of Wausau, Wis., January 25.

E. JULIUS BOEBER, M.D., Kansas City, Mo., to Miss Helen Moeller of Kiel, Germany, at El Paso, Texas, January 18.

T. ROBERT W. WILSON, M.D., Baltimore, to Miss Lillian B. Thackston of Greenville, S. C., at Baltimore, January 17.

Deaths.

William Harrison Jones, M.D. Howard University Medical Department, Washington, D. C., 1887, a prominent colored physician of Harrisburg; a member of the American Medical Association, and at one time president of the Harrisburg Academy of Medicine, died at his home in Harrisburg, January 19, from pneumonia, after a short illness, aged 46. At a special meeting of the Academy of Medicine, remarks eulogistic of the deceased member's private and professional life were made by Drs. Hugh Hamilton, Hiram McGowan, David S. Funk, John W. Ellenberger, John F. Culp and Jerome Z. Gerhard.

Cordelia A. Greene, M.D. Medical Department of Western Reserve University, Cleveland, Ohio, 1857, of Castile, N. Y., a member of the American Medical Association, New York State Medical Association, Wyoming County Medical Society and Physicians' League of Buffalo, died January 28 in the Presbyterian Hospital, New York City, a week after an operation.

Patrick J. McGrath, M.D. Northwestern University Medical School, Chicago, 1894, until a short time ago a member of the staff of the Manhattan State Hospital, Central Islip, Long Island, N. Y., and waiting orders to go to Panama as surgeon in the Canal Zone, was killed January 28 by falling from a sloop near his boarding place in New York City.

Francis D. Edgerton, M.D. College of Physicians and Surgeons in the City of New York, 1864, formerly president of the Connecticut Medical Society; consulting surgeon to Middlesex County Hospital; assistant surgeon of the Twenty-first Connecticut Volunteer Infantry during the Civil War, died at his home in Middletown, January 19, aged 67.

Otis Eugene Hunt, M.D. Berkshire Medical College, Pittsfield, Mass., 1847; for several years secretary of the South District Middlesex Medical Society, and president or secretary or a member of the Newton Hospital Medical Board since its foundation, died at his home in Newtonville, Mass., January 20, aged 82.

Richard Cheatham, M.D. Bellevue Hospital Medical College, New York City, 1877, a member of the American Medical Association; member of the Nashville Board of Health and city health officer for several years, died suddenly from cerebral hemorrhage, January 21, after a long period of ill health, aged 49.

Virginius G. Hitt, M.D. University of Virginia, Richmond, 1863, of Atlanta, Ga., for several years secretary of the Association of Surgeons of the Confederate Army and Navy, died in the Presbyterian Hospital, Atlanta, January 15, from organic heart disease, aged 63.

Edwin Hellyer, M.D. Long Island College Hospital, 1864, died at his home in Kensington, Philadelphia, January 16, from pneumonia. He served as surgeon in the National Guards Hospital during the Civil War, and was visiting physician of the Penn Widows' Asylum.

Joseph R. Duncan, M.D. Cincinnati, 1859, assistant surgeon of the Eleventh Iowa Volunteer Infantry and surgeon of the Forty-sixth Iowa Volunteer Infantry during the Civil War, died at his home in Crawfordsville, Ind., January 21, after a lingering illness, aged 77.

George Whitaker Reed, M.D. Vanderbilt University Medical Department, Nashville, Tenn., 1895, a member of the American Medical Association, postmaster at Biltmore, N. C., died January 10 at his home in South Biltmore, after a long illness, aged 46.

Samuel J. Weaver, M.D. Jefferson Medical College, Philadelphia, 1872, died suddenly at his home in Bethlehem, Pa., January 18, from angina pectoris, aged 54. Dr. Weaver was surgeon to the Lehigh Valley Railroad and coroner of Northampton County.

Frederick W. Richardson, M.D. Long Island College Hospital, Brooklyn, N. Y., 1885, acting assistant surgeon United States Army, formerly of St. Paul, Minn., died at Ligao, Albay, Philippine Islands, January 26, from accidental wood alcohol poisoning.

Edward Valencourt Deuell, M.D. University of Louisville, Ky., 1864, surgeon in the Army from 1863 to 1869, of Saratoga Springs, N. Y., died suddenly, January 20, while giving testimony in court at Saratoga, from cerebral hemorrhage, aged 63.

George C. McFarland, M.D. Rush Medical College, Chicago, 1863, surgeon during the Civil War, for many years proprietor of Oak Lawn Retreat, Jacksonville, Ill., died suddenly in his room in Jacksonville from heart disease, January 16, aged 64.

Joseph A. Cantrelle, M.D. Tulane University of Louisiana Medical Department, New Orleans, 1850, physician of the Howard Society during the yellow fever epidemics of 1857 and 1878, died at his home in New Orleans, January 19, aged 77.

Robert Murray Riddell, M.D. Manitoba Medical College, Winnipeg, and for two years a member of the house staff of Winnipeg General Hospital, died in that institution January 22 from typhoid fever, after an illness of two weeks, aged 38.

George Andrew Campbell, M.D. Faculty of Medicine of Queen's University, Kingston, Ont., 1859, deputy inspector-general of hospitals and fleets, Royal Navy, died at his home in Ealing, near London, England, January 16, aged 68.

Jacob W. Lowman, M.D. Medical College of Georgia, Augusta, 1858, some-time representative in the legislature from Lexington County, S. C., died at his home in Orangeburg, January 15, after a prolonged illness, aged 68.

Joseph A. O'Neill, M.D. Albany (N. Y.) Medical College, 1897, acting assistant surgeon United States Army, was killed during an attack of ladrones on the town of San Francisco de Malabon, Philippine Island, January 24.

Thomas M. Weadock, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1872, a member of the Allen County (Ohio) Medical Society, died from cholemia at his home in Lima, January 20, aged 66.

Phineas S. Rose, M.D. Albany (N. Y.) Medical College, 1863, surgeon of the One Hundred and Seventy-ninth New York Volunteer Artillery in the Civil War, died at his home in Pasadena, Cal., January 19, aged 66.

Robert Wolfgang Schoenle, M.D. University of Louisville Medical Department, 1890, formerly of Seattle, Wash., died at Pasadena, Cal., January 24, from tuberculosis, after an illness of several years, aged 36.

Nathaniel Stacy Tafft, M.D. Cincinnati, 1852, who served several times in the state legislature, and was the oldest practitioner in Wabasha County, Minn., died at his home in Plainview, January 21, aged 74.

Alfred M. Bird, M.D. Illinois State Board, 1878, twice alderman and twice mayor of Mason City, Ill., died at his home in that city, January 25, from cerebral hemorrhage, after an illness of one year, aged 62.

Augustus J. Hofling, M.D. Miami Medical College, Cincinnati, 1899, secretary of the West End Medical Association, and district physician, died at his home in Cincinnati, January 22, from diabetes, aged 47.

James C. Bowser, M.D. McGill University Medical Department, Montreal, 1883, died at his home in Rexton, N. B., Canada, January 12, from consumption, after an illness of three years, aged 45.

Harry W. Spence, M.D. Toronto University Medical Faculty, 1898, M.R.C.S. England, who served with an English regiment in the South African War, died at his home in Ottawa, Ont., January 24, aged 29.

William M. McKemy, M.D. Bellevue Hospital Medical College, New York City, 1891, died from the effects of a self-inflicted bullet wound through the lungs, at his home in Pecos, Texas, January 23.

John B. Fuller, M.D. Texas Medical College and Hospital, Galveston, 1874, died at the house of his son in Jacksonville, Texas, January 18, after a prolonged period of ill health, aged 78.

Thomas Lafayette Lafon, M.D. Jefferson Medical College, Philadelphia, 1885, died at his home in La Grange, Mo., January 25, from consumption, after an illness of five years, aged 41.

Henry F. Hendrix, M.D. St. Louis Medical College, 1874, a strong advocate of hydrotherapy in infantile disease, died at his home in St. Louis, January 29, from cerebral hemorrhage, aged 61.

Storrs Hall, M.D. Medical Institution of Yale College, New Haven, Conn., for many years a practitioner of Rosendale, Wis., died at the home of his son in Ripon, Wis., January 13, aged 90.

Eugene S. Rice, M.D. New York City, 1879, coroner of Fountain County, died at his home in Wallace, Ind., January 14, from injuries received in a fall three days before, aged 47.

Jonathan Nichols, M.D. Albany (N. Y.) Medical College, 1848, a pioneer resident of Atlantic, Iowa, died at Los Angeles, Cal., from hypertrophy of the heart, January 17, aged 78.

Mark Harrison Ragsdale, M.D. Medical College, Indianapolis, 1875, of Alfordsville, Ind., died at the home of his son in Washington, Ind., January 14, from pneumonia, aged 68.

G. Granville Faught, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1879, died suddenly at his home in Philadelphia, January 25, aged 52.

James R. Brewer, M.D. Vanderbilt University Medical Department, Nashville, Tenn., 1878, a pioneer of Muskogee, I. T., died Dec. 30, 1904, at Santiago, Cal.

Joseph **A. Anthony, M.D.**, a veteran of the Mexican War, died January 20 at his home in Terrell, Texas, from the effects of a fracture of the hip, aged 77.

Henry **Ullyot, M.D.** College of Physicians and Surgeons of Ontario, Toronto, 1869, died at his home in Elmira, Ont., January 18, from pneumonia, aged 61.

Edward **Howard Craven, M.D.** Jefferson Medical College, Philadelphia, a retired physician, died at his home in Philadelphia, January 19, aged 82.

Frank **McCormick, M.D.** Toledo Medical College, 1895, of Fremont, Ohio, died at the home of his sister in Muncie, Ind., after a long illness, aged 53.

Reginald Percy Vivian, M.D. College of Physicians and Surgeons of Ontario, Toronto, 1900, died at his home in Barrie, Ont., Dec. 8, 1904, aged 30.

Hugh B. McConnell, M.D. Trinity Medical College, Toronto, Ont., 1891, of Boston, died at his home in West Somerville, Mass., January 25, aged 34.

Wesley R. Davis, M. D., a retired physician of Stephens City, Frederick County, Va., died January 26 at Memorial Hospital, Winchester, Va., aged 60.

Eli W. Free, M.D. College of Physicians and Surgeons, Baltimore, 1847, died at his home in Baltimore, January 27, from heart disease, aged 80.

Lyman Wells Ranney, M.D., retired, died at his home in New Castle, Pa., January 12, from the effects of morphin taken accidentally, aged 85.

W. J. Dobbins, M.D. 1844, a practitioner of California in 1850, died at his home in Vacaville, Cal., January 3, from kidney disease, aged 81.

Archibald S. Kirkland, M.D. University of the Victoria College, Coburg, Ont., 1869, died at his home in Collingwood, Ont., Dec. 9, 1904, aged 60.

John W. Futrell, M.D. University of Louisville, Ky., 1872, died at Shawnee, Okla., January 20, after an illness of a year, aged 53.

Frank B. Jones, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1872, of Petersburg, Mich., died recently.

William Jackson, M.D. Chicago, 1891, died at his home in Climax, Mich., January 14, after an illness of three days, aged 59.

Albert Ellison, M.D. New York University, New York City, 1888, died at his home in Benton Center, N. Y., Dec. 20, 1904, aged 45.

Charles G. Sprague, M.D. New York, 1880, of Omaha, died at his farm near Leroy, Neb., after a long illness, January 18, aged 66.

Arthur Toal, M.D. Detroit College of Medicine, 1887, died at his home in Peck, Mich., January 24, from angina pectoris, aged 49.

Henry M. Flanigan, M.D. Philadelphia, 1875, died suddenly from heart disease at his home in Penn's Grove, N. J., January 9.

John F. Heinze, M.D. Missouri, 1878, died at his home in St. Joseph, Mo., January 20, from cerebral hemorrhage, aged 76.

Horace G. Anderson, M.D. Iowa, 1881, died suddenly at his home in Nathrop, Colo., January 11, from nephritis, aged 46.

John W. McAllister, M.D. Medical College of Indiana, Indianapolis, 1895, died at his home in Idaville, Ind., January 20.

John B. Brooker, M.D. New York City, 1894, died at his home in Mayfield, N. J., last week, after a long illness.

William Grant Mitchell, M.D. Gay's Hospital, London, England, died recently in Victoria, B. C., aged 37.

Charles C. Olmsted, M.D. Ohio, 1860, died at his home in Kansas City, Mo., January 25, aged 65.

Davidson Macdonald, M.D. Toronto School of Medicine, 1873, died in Toronto January 3.

Christian A. Hermann, M.D. Illinois, 1894, died at his home in Chicago, January 22, aged 59.

Death Abroad.

N. Sklifossovski, M.D., one of the leading surgeons of Russia, and president of the International Medical Congress at Moscow in 1896, died December 12 at his country home, aged 68. The list of his contributions to the literature is a long one.

Book Notices.

MENTAL DEFECTIVES; THEIR HISTORY, TREATMENT AND TRAINING. By Martin W. Barr, M.D., Chief Physician Pennsylvania Training School for Feeble-minded Children, Elwyn, Pa. Illustrated by 53 Full-page Plates. Cloth. Pp. 368. Price, $4.00 net. Philadelphia: P. Blakiston's Son & Co. 1904.

This book is based on knowledge and extensive experience. It is encumbered by no fads, and is biased by no pet theories; it is the product of a well-balanced mind and is a safe guide. Strictly speaking, it can scarcely be called a medical work, still no neurologist, alienist, or physician having to do with feeble-minded or defective children can afford to be without it. But the medical man does miss a chapter on pathology. He has learned to think of disease in terms of pathologic processes if not of pathologic anatomy. With the clinical picture he correlates a vision of abnormal tissue or deranged function. And this is well. To read a book, then, of more than three hundred pages on the mentally defective and find nothing of the causative brain conditions gives the physician an acute feeling of incompleteness. In his preface the author states that the work "addresses itself primarily to anxious parents and to earnest teachers." For the latter, meaning teachers of defectives, it is invaluable. So far as we are aware, there is no work in any language which can take its place. For the average parent the book is much too complete, too technical, too erudite. To sift from the mass the particular facts and advice applicable to his own child would require a layman of unusual education and intelligence. The different chapters are of most unequal value. Chapter 2 on history is very complete (53 pages) and would make a fitting introduction to a work three times the size of this one. The chapter on training and treatment is particularly good, but it might well be two or three times as long. There are well-considered chapters on craniectomy and asexualization, cretinism, microcephalus and hydrocephalus, and epilepsy. The author has seen fit to introduce a chapter on echolalia, one on adenoma sebaceum and one on Samuel Henderson, murderer—all reprints of published articles which properly have no place in this volume. They are simply padding, good padding, but padding none the less. Sixty-four pages are devoted to condensed statements of illustrative cases. They are very good and serve excellently well as sketches of types. There are about 135 of these cases and there is a half-tone reproduction of a very good photograph of each patient, but the arrangement of the pictures is abominable. The text is pages 249 to 313, the pictures are scattered through the book from page 36 to page 308. There are no cross references, so that a considerable search is necessary to find illustration going with description and vice versa. The defects are superficial, the excellencies are fundamental, and the work is sincerely commended to all interested in the subjects it covers.

PNEUMONIA AND PNEUMOCOCCUS INFECTIONS. By Robert B. Preble, A.B., M.D., Professor of Medicine, Northwestern University. Illustrated. Cloth. Pp. 211. Price, $1.00. Chicago: Cloyd J. Head & Co. 1905.

This monograph of 211 pages is timely. When pneumonia is destroying annually, in some parts of our country, more lives than tuberculosis, when new facts concerning its diagnosis and pathogenesis are being brought to light, and when confusing, conflicting, muddled and extravagant views are held as to treatment, it is well to have a résumé of the facts brought to our attention. This has been done by Preble. If one looks here for the latest views concerning the bacteriology of the pneumococcus, for the finer histologic details of the diseased lung or for the latest theoretic and experimental work on pneumonia along the line of Ehrlich's side-chain theory, he will be disappointed. And we take it the omission is made because the book is intended for the general practitioner and not for the expert, for the research man nor for the original investigator. Preble emphasizes the value of early blood examinations in suspected pneumococcus infections; the importance of paying attention to slight and atypical symptoms in the diagnosis of pneumonia; and above all to the inexcusability of an error in diagnosis made because of failure to examine

the chest. The influence of the book as regards therapy will be good. We are a little disappointed that treatment does not receive more attention and that more details as to drugs, remedial measures, diet and nursing are not given. But the introductory remarks on the subject of treatment, regarding the uselessness or even harmfulness of giving the so-called specifics are well put and should do much to discourage the reckless though well-intended maltreatment by overdrugging. Statistics concerning therapy, unless they be carefully and scientifically compiled, are almost worthless. As Preble well says: "A judicious selection of cases will enable one to have a mortality at any desired point between 2 or 3 per cent. and 100 per cent." There is a healthful skepticism, not pessimism, about Preble's therapy that will do good in many quarters. While most of the facts are the old, familiar ones, some are emphasized and have attracted our attention because they are not always as clearly recognized as they should be. As illustrations we might mention the importance of making bacteriologic cultures from the blood; the possibility of recovery from pneumococcus meningitis; the aid to diagnosis from lumbar puncture in suspected meningitis complicating pneumonia; the distinctness with which bronchial breathing is heard by the direct method as compared to mediate, i. e., stethoscopic, auscultation. The points made regarding the value of the three symptoms, sudden onset with chill and high fever, herpes and leucocytosis as significant of pneumococcus infection (with or without pulmonary localization) are worth consideration and more extended observation. There is not, we think, enough emphasis laid on the probable conveyance of pneumonia from patient to patient by means of sputum, by coughing, etc., nor to the proper disposal of the sputum suggested under treatment. The alimentary symptoms, tympany, diarrhea, etc., deserve fuller mention. Post-pneumonic psychoses are not so rare that they should be passed unnoticed. The book is only in fairly attractive form. It could be improved in this respect. There are a few mediocre illustrations. There are not a few typographical errors —temperature for temptation, communis for commune, preturbatis for preturbatic, etc. From page 76 to the end of the book there are 33 lines to the page instead of 31 as found in the first 76 pages. While this, and other mechanical defects mentioned, do not seriously mar the book, they are blemishes that should not be allowed to pass without criticism.

DIET IN HEALTH AND DISEASE. By Julius Friedenwald, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and John Ruhräh, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Cloth. Pp. 689. $4.00 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

This work discusses, first, the physiology and chemistry of digestion. In this relation the authors mention the quantity of food required for infants and adults under the various conditions by giving standard dietaries containing the important articles of food, with their relative food values expressed in heat units or calories. Mention is also made of the influence produced by different factors on digestion, such as the hours, order and frequency of meals, variety in diet, rest, and exercise before and after meals. The relative values of the different waters are also shown by their chemical composition presented in tabulated form. A small space is devoted to food adulteration. That part given to infant feeding includes the views and tables of the most important writers on the subject. The discussions on diet in diseases of the gastro-intestinal tract, circulatory system, genitourinary system, skin, etc., include the ideas of the leading authorities on these lines. The literature on the subject of diet has been thoroughly reviewed and so compiled and arranged in a systematic manner as to render it practical, simple and easily accessible to the physician. We believe the statement to be true that the instructions given to patients by the physician as to what should be included in, or restricted from his diet during treatment are, as a rule, not so definite and explicit as they should be. This book is of value in assisting the physician in outlining a proper diet list to meet the demands and needs of those cases which may require a special diet or a change in diet suitable to the different stages of the disease.

A DICTIONARY OF NEW MEDICAL TERMS, Including Upward of 38,000 Words and Many Useful Tables, Being a Supplement to "An Illustrated Dictionary of Medicine Biology and Allied Sciences." By George M. Gould, A.M., M.D., Editor of *American Medicine*. Based on Recent Scientific Literature. Half Morocco. Pp. 571. Price, $5.00 net. Philadelphia: P. Blakiston's Son & Co. 1905.

In the progress that is being made in medical science and in the sciences related to medicine new words must be coined to meet new conditions and new things. Gould tells us in the work before us that in a decade over 30,000 new terms have been devised, and this is believable, although he, of course, includes the terms covering all literature. The progress being made in experimental medicine, pathology, bacteriology, etc., makes new terms especially necessary, and those who desire to keep up find one of the stumbling blocks to be the new words that are in many instances meaningless. A critical examination of Gould's book shows that he has incorporated all new terms that relate to medicine, making it a valuable supplement not only to his "Illustrated Dictionary of Medicine," but to all other dictionaries. Not only have the new words been included, but old words which had become obsolete and which have now been revived are also incorporated in the book. The definitions in many instances are really descriptive in character and this adds to the value of the book. The lists of stains and tests are particularly worthy of commendation. This dictionary is commended to those who are anxious to be in touch with the progress which is being made and the literature pertaining to this progress.

THE PHYSIOLOGICAL FEEDING OF INFANTS. A Practical Hand-Book of Infant Feeding, and Key to the "Physiological Nursery Chart." By Eric Pritchard, M.A., M.D. (Oxon.), M.R.C.P. (Lond.). Second Edition, Greatly Enlarged and Entirely Rewritten. Cloth. Pp. 202. Price, $1.50 net. Chicago: W. T. Keener & Co. 1904.

In this book, Pritchard emphasizes the impracticability of using one formula for all children. In the case of breast-fed infants he lays stress on the importance of regular meals for the mother as well as on the necessity of regular intervals between feedings for the child. Explicit directions are given for the preparation of artificial food and for modifying cow's milk, not only for infants but for sickly and delicate children. The development and physiology of the infant is also given careful attention. The book is complete and practical.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. By J. A. Milroy, M.A., M.D., Demonstrator of Physiology, Queen's College, Belfast, and T. H. Milroy, M.D., B.Sc., F.R.S.E., Professor of Physiology, Queen's College, Belfast. Cloth. Pp. 200. Price, $1.60 net. New York: Longmans, Green & Co. 1904.

This is a practical, concise and intelligible book for the use of students. Methods of work and technic are alone considered. The proteids and proteid reactions are fully dealt with. The chapters on the blood and on the urine are particularly good and should prove of value not only to students, but to general practitioners. Experiments are described fully, and there are numerous cross references which add to the value of the work.

Miscellany.

Annual Progress Number.—The last issue of the *Interstate Medical Journal* is the "Annual Progress Number," which reviews the medical literature of the past year. It contains several comprehensive and scholarly articles reviewing the progress made in all branches of medicine during 1904.

Charas Poisoning.—From Delhi, India, according to *Albany Medical Annals*, several cases are reported of poisoning by charas, a resin of cannabis indica. Eight Hindu prisoners in the jail became suddenly ill and confessed that they had managed to secure this drug, which they smoked in pipes. They vomited, complained of headache, nausea, giddiness and faintness of vision and of dryness in the mouth and throat. The conjunctiva was suffused and the pupils of all were

extremely contracted. The pulse was full and bounding and 120 per minute. One symptom was peculiar and noteworthy. While in a sitting posture the patient was constantly turning round and round from the left to right in a circular fashion. Ordinary remedies were resorted to and the patients were all right in the morning.

Encouragement and Sympathy for Patients.—Every practitioner of the highest position in surgery and medicine, said Lord Kelvin, addressing a body of physicians, has to administer spiritual consolation to his pttients. Do not run away with words and think I am encroaching on theological ground. When you keep up a patient's spirit you are administering spiritual consolation to him. Many a poor fellow, laid up with a broken leg in a splint, looks for the moment of the weary twenty-four hours when the physician gives him a kindly word, although only in passing. Let your natural feelings prompt you in your dealings with your patients and you can not go wrong, and you will be spiritual helps to your patients as well as physicians and surgeons. As men can not live on bread alone, patients can not get cured on drugs and splints alone.

Nomenclature of Synthetic Chemicals.—Pharmacists are frequently directed to dispense preparations about which they know absolutely nothing more than the fanciful name ending in al, en, ic, in or ol, says Golaz-Vevey (in *Schweiz. Woch. f. Chem. u. Phar.*). The names usually consist of (1) some arbitrary abbreviation of the descriptive chemical title; (2) some real or imaginary reference to the possible therapeutic uses of the remedy; or (3) some fanciful and usually far-fetched discovery of the manufacturer. Pharmaceutic and medical societies should demand that manufacturers furnish information on (a) the commercial as well as the exact chemical constitution of the preparation; (b) reliable tests for identity; (c) melting and boiling points; (d) solubility; (e) special incompatibility; (f) dose and therapeutic action; (g) necessary precautions that are to be observed in keeping the preparation. If this really necessary information were forthcoming in all cases, new preparations might be dispensed and used with some prospect of a more rational advance in therapeutics.

Ocean Voyage for Invalids.—From the *British Medical Journal* we learn that a large sailing vessel will leave Great Britain about the end of January for a long voyage in the Atlantic in warm latitudes. It will carry about fifty tubercular patients and a number of inebriate and other invalids. The consumptives will live on deck in the open air night and day, constantly breathing absolutely pure air containing much ozone. During the voyage the vessel will call at such ports as Gibraltar, Canary Islands, Rio Janeiro, River Plate, Table Bay, St. Helena, Pernambuco, West Indies, etc. Time will be given to the passengers to see something of the countries and their peoples, and to learn something of their customs and manners. Everything will be done on board to make time pass pleasantly, music, games of all kinds, books, fishing and boat sailing when possible, and it is also proposed to teach a foreign language (French or Spanish). There will be an efficient staff of physicians and nurses. This example might be advantageously followed in this country. Many patients who shrink from sanatorium treatment would enjoy such a voyage and would be greatly benefited thereby. The countries visited and the novelty of life aboard ship would be of sufficient interest to keep the patient's mind diverted from his physical condition—a most difficult matter to accomplish in a sanatorium.

Imagination as a Cause of Death.—Two or three stories in British newspapers illustrate the powerful effect the imagination can exercise over the phenomena of life. The *Medical Press* reports that in one case a girl, suffering from despondency of spirits, is said to have swallowed some harmless fluid in mistake for carbolic acid. She immediately declared that she had poisoned herself, and soon died, though we are left without any information as to the nature of the equally peculiar case, a young woman asked a druggist for laudanum, but the clerk, noticing her excited condition, supplied port wine. Shortly afterward she was discovered apparently suffering from opium poisoning, and the usual anti-opium treatment was successful. Though we have no authority beyond newspaper currency for either of these stories, says the paper cited above, there is nothing in them inherently impossible. Apart from the extraordinary mimicry of which hysterical subjects are capable, there are several well-authenticated instances in which death has been the result of quite imaginary causes, or rather of the fright resulting therefrom. Perhaps the best known of these is the case of the janitor of a Scottish university, who, being threatened with being beheaded by a party of students, was made to kneel before an improvised block, and was struck on the neck with a wet towel. To the astonishment of the students, he did not move, and was actually found to be dead.

Effects of Borax and Boracic Acid on Health.—Dr. H. W. Wiley, chief of the bureau of chemistry of the Department of Agriculture, in his report (recently issued) of the experiments undertaken by the bureau to ascertain the effects of borax and boracic acid on digestion and health, gives some interesting information regarding the experiments. The persons volunteering were required to sign a pledge agreeing to follow implicitly the rules and regulations governing the "hygienic table" and to take no other food or drink—water excepted—than that provided. Regular meals and regular hours and habits of life were prescribed and the individuals were examined every ten days by a physician of the Public Health and Marine-Hospital Service. Systematic examinations of blood, urine and feces were made to determine the amount of boric acid excreted and the method of excretion. The mental attitude of the individuals was also carefully noted. All the young men followed their usual vocations during the experiments. Dr. Wiley states that while some of "the members of the table were made temporarily ill by the quantities of the preservative administered, it is nevertheless an interesting fact to note that at the end of the year, after the final 'after-period' had been passed, they appeared to be, and declared themselves to be, in better physical condition than when they entered on the experimental work seven months before." This probably may be explained by the self-restraint, temperance and regularity in meals and in hours for sleep and work which were insisted on during the course of the experiments. It is evident that the tendency toward a good physical state and good health produced by the regular habits of life counteracted the unfavorable tendency of any preservative ingested, so that, though the preservative might have produced injurious effects, judged by the condition of the subject, the results of the experiment might be pronounced negative.

State Boards of Registration.

COMING EXAMINATIONS.

Board of Medical Registration for Vermont, Burlington, February 7, 8 and 9. W. Scott Nay, M.D., secretary, Underhill.

Nebraska State Board of Health, State House, Lincoln, February 8-9. George H. Brash, M.D., secretary, Beatrice.

Kansas State Board of Medical Registration and Examination, Topeka, February 14-15. Secretary, G. F. Johnston, M.D., Lakin.

Connecticut Medical Examining Board, City Hall, New Haven, March 14-15. Secretary, Charles A. Tuttle, M.D., New Haven.

Massachusetts Board of Registration in Medicine, State House, Boston, March 14-15. Secretary, Edwin B. Harvey, M.D., Boston.

Maine Board of Medical Registration, City Building, Portland, March 28. Secretary, Wm. J. Maybury, M.D., Saco.

Colorado Report for 1904.—Dr. S. D. Van Meter, secretary of the Colorado State Board of Medical Examiners, reports the examinations held in Colorado during 1904. At each examination 70 questions were asked in 7 subjects, and percentage required to pass was 70. During the quarter ending March 31, 5 persons were examined, of whom 2 passed and 3 failed. Forty-six persons were licensed on diploma, 4 duplicate certificates were issued and 2 persons were refused license on diploma. During the quarter ending June 30, 4 persons were

examined, of whom 1 passed and 3 failed. One hundred and eighteen persons were licensed on diploma, 2 were refused on diploma, 1 was refused on the "ten-year clause," and one examination was deferred by request. During the quarter ending September 30, 2 persons were examined, both of whom failed. One hundred and sixteen licenses were granted on diploma, 3 duplicate certificates were issued, 5 were refused on diploma, one examination was deferred by request and one deferred, "ten-year clause." During the quarter ending December 31, 86 licenses were granted on diploma, 2 duplicates were issued, 3 licenses were refused on diploma, 2 persons were examined and failed, 2 applications on diploma were deferred and 2 examinations were deferred. All applicants who are refused a license on diploma have the privilege of taking the examination.

Indian Territory Reports.—Dr. B. W. Caldwell, secretary of the Board of Medical Examiners of the Central District, reports the written examinations held at South McAlester, July and October, 1904. At both examinations the number of subjects examined in was 13; questions asked, 130; percentage required to pass, 70, and not below 60 in any subject. At the examination July 5-7 the total number examined was 18, of whom 6 passed and 12 failed. Seventeen were undergraduates. At the examination held October 4-6, 1904, 34 were examined, of whom 16 passed and 18 failed.

Dr. E. E. Owens, secretary of the Medical Examining Board, Southern District, reports the written examinations held at Ardmore July 4-5, at Chickasha October 3-4, and at Paulo Valley November 7-8, 1904. At the examination held at Ardmore the number examined was 32, all undergraduates, of whom 9 passed and 23 failed. At the examination at Chickasha the number examined was 17, all undergraduates, of whom 6 passed and 11 failed. At the examination held at Paulo Valley the number examined was 33, all undergraduates, of whom 6 passed and 27 failed.

Kentucky October Report.—Dr. J. N. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination, held at Louisville, Oct. 3, 1904. The number of subjects examined in was 10; total questions asked, 100; percentage required to pass, 70, and not less than 60 in any one subject. The total number examined was 10, of whom 4 passed, 4 failed, and 2 withdrew from the examination. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Western Reserve Med. Coll	(1901)	92
Cleveland Homeo. Med. Coll	(1904)	85
Baltimore Med. Coll	(1904)	75
Miami Med. Coll	(1904)	80
FAILED.		
Baltimore Med. Coll	(1903)	60
Univ. of Maryland	(1904)	65
Louisville Hosp. Med. Coll	(1900)	49
Knoxville Med. Coll	(1901)	48
WITHDREW.		
Hosp. Coll. of Med	(1904)	
Louisville Med. Coll	(1903)	

Maine November Report.—Dr. W. J. Maybury, secretary of the State of Maine Board of Registration of Medicine, reports the oral and written examination held at Augusta, Nov. 15, 1904. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number examined was 17, all of whom passed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Coll. of P. and S., Boston	(1904)	85.8, 86.6
Med. School of Maine	(1904)	89.9, 87.5, 85.5
Harvard Med. School	(1904) 93.7, (1894) 93.2 (1892)	94.3
Univ. of Michigan	(1903)	95.9
Baltimore Med. Coll	(1904)	87.3
McGill Univ.	(1904)	84
Tufts Coll. Med. School	(1902)	92
Eclectic Med. Coll., Milwaukee	(1895)	84.5
Hahnemann Med. Coll., Chicago	(1901)	87
Medico-Chirurgical Coll., Philadelphia	(1904)	88.5
Boston Univ. Med. School	(1904)	92
Coll. of P. and S., Baltimore	(1904)	87.3

Missouri Report for 1904.—Dr. W. F. Morrow, secretary of the Missouri State Board of Health, reports the written examinations held in Missouri during 1904. The number of questions asked at each examination was 12, and percentage required to pass, 75. At the examination held in Kansas City in April 25 persons were examined, of whom 19 passed and 6 failed. The following colleges were represented:

	Per Cent.
PASSED.	
Medico-Chirurgical Coll., Kansas City	75, 76, 81
University of Michigan	80
College of P. and S., Chicago	78, 75
Eclectic Medical University	75
Barnes Medical College	77
University Med. Coll., Kansas City	75, 78, 75, 79, 80
Woman's Med. Coll., Kansas City	85, 78
University of Louisville	78
Creighton Medical College	84, 77
Tennessee Medical College	80
FAILED.	
University of Louisville	68
Eclectic Medical University	60
Barnes Medical College	65
Central Medical College, St. Joe	70
Medico-Chirurgical College, Kansas City	69, 60

At the examination held in St. Louis, April 19-21, 69 persons were examined, of whom 52 passed and 17 failed. The following colleges were represented:

	Per Cent.
PASSED.	
Marion Sims-Beamont Med. Coll	83, 82, 79, 77, 77, 76
St. Louis University	80, 79, 76, 84, 81
St. Louis Homeo. Med. Coll	78
Barnes Medical College	85, 85, 80, 77, 78, 75, 75
College of P. and S., St. Louis	81, 75, 75, 76
University of Michigan	80
Washington University	80, 78, 81, 82, 79, 75
Meharry Medical College	78, 85
Rush Medical College	77
Hospital College of Medicine	76
Harvard Medical Department	77
Medico-Chirurgical College, Philadelphia	79
University of Kentucky	76, 75
Kentucky School of Medicine	75, 76, 77
American Medical College	78, 77, 79, 75, 76, 80, 78
College of P. and S., Chicago	78
Homeopathic College of Medicine	77, 79
University of the City of New York	79
FAILED.	
Barnes Medical College	68, 71, 70, 67, 70, 69
Marion Sims-Beaumont Medical College	69
American Eclectic Medical College	60, 70
Meharry Medical College	68
Washington University	71, 70
University of Kentucky	69
Louisville Medical College	55
College of P. and S., St. Louis	67, 70
University of the South	70

The general average attained by all representatives of the Marion Sims-Beaumont Medical College who passed at this examination was 79; of all representatives of Barnes Medical College who passed, 79.4; of Washington University, 79.1.

At the examination held in Kansas City, June 20-22, 25 persons were examined, of whom 19 passed and 5 failed. The following colleges were represented:

	Per Cent.
PASSED.	
University of Tennessee	78
Rush Medical College	80, 84, 80
Hering Medical College, Chicago	75
Central Medical College, St. Joe	81
Western Reserve University	79
Barnes Medical College	77
Jefferson Medical College	86
Keokuk Medical College	78
Hahnemann Medical College, Philadelphia	81
Chicago Homeopathic Medical College	75
University of Nashville	76, 78
Washington University	76
Louisville Medical College	75, 81
Creighton Medical College	76
College of P. and S., Keokuk	75
FAILED.	
Miami Medical College, Cincinnati	60
Kansas City Medical College	70
Eclectic Medical University, Kansas City	69
Keokuk Medical College	60
College of P. and S., Keokuk	68

At the examination held in St. Louis, September 19-21, 41 persons were examined, of whom 31 passed and 10 failed. The following colleges were represented:

	Per Cent.
PASSED.	
Northwestern University	77, 76
University of Missouri	79, 84
Johns Hopkins University	80
Medical College of Ohio	76
Rush Medical College	80, 77
Harvard University	83
Illinois Medical College	78, 80
University of Michigan	79
Missouri Homeopathic Medical College	75
Milwaukee Medical College	75
University of Kentucky	76, 79
Keokuk Medical College	76
University of Maryland	77
American Medical College	78
University of Iowa	78
St. Louis University	76, 76, 78
University Medical College, Kansas City	78
Barnes Medical College	78, 75, 80
College of P. and S., Chicago	75
Harvey Medical College, Chicago	77
Marion Sims-Beaumont Medical College	78, 79
FAILED.	
Kentucky School of Medicine	65, 71
College of P. and S., St. Louis	69, 71

Grant University	68
St. Louis University	69
Eclectic Medical College, Kansas City	70
College of P. and S., Keokuk	50
Keokuk Medical College	65
American Medical College	69

At the examination held in St. Louis, December 19-21, 82 persons were examined, of whom 42 passed and 40 failed. The following colleges were represented:

PASSED.	Per Cent.
Barnes Medical College, the grade of 75 was reached by two, 76 by three, 77 by three and 80 by one.	
Missouri Homeopathic Medical College	79
Kentucky School of Medicine	77, 77
Starling Medical College	78
Rush Medical College	77
Louisville Medical College	76
St. Louis University, the grade of 75 was reached by three, 76 by two, 77 by three, 78 by one and 81 by one.	
College of P. and S., Keokuk	76
College of P. and S., St. Louis	77, 75, 75
Washington University	80, 76
Northwestern University	79
Eclectic Medical Institute	78
College of P. and S., Chicago	75
Woman's Medical College, Pennsylvania	85
American Medical College	76, 75
Marion Sims-Beaumont Medical College	80, 76, 75, 80

FAILED.	
Barnes Medical College, the grade of 52 was reached by one, 54 by one, 55 by two, 60 by three, 63 by one, 65 by one, 66 by four, 67 by two, 68 by five, 69 by four, 70 by one.	
University of Louisville	60, 54
Marion Sims-Beaumont Medical College	62, 68
Medical College of Alabama	68
College of P. and S., St. Louis	69, 69, 66, 70, 63, 40
Ohio Medical University	63
Missouri Homeopathic Medical College	60
American Medical College	64, 65

The general average attained at this examination by all representatives of Barnes Medical College who passed was 76.5; of all representatives of St. Louis University who passed, 77.3.

During the year 300 persons were registered on diploma.

New York Report for 1904.—Dr. Charles F. Wheelock, secretary of the New York State Board of Medical Examiners, reports the examinations held at Albany, Buffalo, New York and Syracuse during 1904. The total number of persons examined during the year was 793, of whom 667 passed and 126 failed. The following colleges were represented:

PASSED.

Albany Medical College had 40 representatives; Bellevue Medical College and Hospital, 49; College of P. & S., New York City, 160; Cornell University, 58; Eclectic Med. Coll. of the City of New York, 9; Long Island College Hospital, 45; New York Homeo. Medical College and Hospital, 27; New York Medical College and Hospital for Women, 9; New York University Medical College (1897), 1, 30; Syracuse Medical College, 30; University of Buffalo, 43; Yale, 9; Columbia University, 2; Georgetown University, 3; Howard University, 1; Harvard University, 6; Chicago Homeopathic Medical College, 1; College of P. & S., Chicago, 1; Northwestern University, 3; Rush Medical College, 3; Bowdoin Medical College, 1; Baltimore Medical College, 12; Baltimore University School of Medicine, 4; College of P. & S., Baltimore, 4; Johns Hopkins University, 14; University of Maryland, 1; Boston University School of Medicine, 4; Tufts Medical College, 1; Detroit College of Medicine, 2; University of Michigan, 5; University of Minnesota, 1; Omaha University, 1; Dartmouth Medical College, 1; College of P. & S., Cleveland, 2; Eclectic Medical Institute, Cincinnati, 1; Hahnemann Medical College and Hospital, Philadelphia, 6; Jefferson Medical College, 11; Medico-Chirurgical College, Philadelphia, 1; University of Pennsylvania, 15; Western Pennsylvania Medical College, 2; Woman's Medical College, Philadelphia, 10; South Carolina Medical College, 1; University of Nashville, 2; University of Vermont, 3; University College of Medicine, Richmond, Va., 1; University of Virginia, 4; University of Vienna, 2; Laval University, Canada, 1; McGill University, 5; Ontario Medical College for Women, 2; Queens University, Kingston, Canada, 2; Trinity University, Canada, 1; University of Toronto, 5; University of Berlin, 2; University of Bonn, 1; University of Erlangen, 2; University of Munich, 2; University of Wurzburg, 1; University of Naples, 15; University of Palermo, 3; University of Rome, 2; University of Siena, 1; University of Turin, 1; University of Moscow, 2; University of St. Vladimir, 1; University of Edinburgh, 1; University of Glasgow, 1; University of Zurich, 1; American School of Medicine of the Syrian Protestant College, Beirut, Turkey, 1. License to practice medicine in the German Empire, 1.

FAILED.

Albany Medical College, 1 representative; College of P. & S., New York City, 5; Cornell University, 1; Long Island College Hospital, 1; University and Bellevue Hospital Medical College, 2; University of Buffalo, 4; Howard University, 1; College of P. & S., Chicago, 1; Illinois Medical College, 1; Keokuk Medical College, 1; Kentucky School of Medicine, 1; University of Kentucky, 1; University of Louisville, 1; Baltimore Medical College, 1; Baltimore University School of Medicine, 4; Tufts Medical College, 1; University of Michigan 1; Marion Sims Medical College, 1; Cleveland University of Medicine and Surgery, 1; Jefferson Medical College, 2; University of Pennsylvania, 1; University of Vermont, 3; University of Budapest, 1; University of Koenigsberg, 1; University of Athens, 1; University of Naples, 19; University of Bucharest, 2; University of Dorpat, Russia, 1; Karolinsko Medico-Chirurgical Institute, Stockholm, 1.

Vermont April and October Reports.—Dr. W. Scott, secretary of the Vermont State Board of Medical Registration, reports the written examinations held at Burlington in April and October, 1904. At each examination the number of subjects examined in was 8; total questions asked, 80; percentage required to pass, 70. At the April examination 4 persons were examined, all of whom passed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
University of Vermont	(1901) 78, (1902)	76
Amer. Med. Miss. Coll., Chicago	(1901)	81
Ohio Medical College	(1897)	77

At the October examination 8 persons were examined, all of whom passed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
McGill University	(1902)	87
University of Vermont	(1904)	76, 70
Baltimore Med. Coll.	(1904)	86
Jefferson Med. Coll.	(1903) 80, (1904)	74
Dartmouth Med. Coll.	(1901)	84
Cornell University	(1904)	85

Washington Will Not Reciprocate.—The Washington State Board of Medical Examiners is said to have declined the request of the Illinois State Board of Health to establish reciprocity. The board is quoted as saying that it desires to treat all applicants alike, and that it will require all newcomers from whatever state to take the examination.

Association News.

Yellowstone Park and Portland Special.

As announced last week, it is proposed to run a special train to Portland, leaving Chicago June 30, stopping six days at the Yellowstone Park, and arriving at Portland on Monday morning, July 10. It is necessary to arrange with the park management some months beforehand for the dates required and for this reason it is essential to know at once whether a sufficient number will probably go to warrant running such a train. Will those who think they would like to go on such a train notify THE JOURNAL at once? Several letters have been received in response to the notice last week, and, as questions asked in these may be asked by others, we answer them here. One member asks if he can stop off for a month at Denver on his return; another wants to stop over at Glenwood Springs, and another at Dickenson, N. D. All these privileges can be obtained. The time limit to the tickets is fixed at 90 days from the time of starting until returning, and the railroads will be liberal in giving stopovers on the return trip, but probably not on the outward trip. One member asks if something can not be done to avoid the trouble usually met with in getting tickets endorsed for the return trip; in other words, as the correspondent puts it, "can not there be less red tape?" Replying to this: The western roads are not given to so much "red tape" as is the case with those of the East, for it is not necessary. Possibly one or two roads will issue tickets that will have to be deposited, but the majority of the roads will not require this.

The extra expense necessary for the week at the park will be less than $50. This will include coaches, hotel expenses —in fact, everything. The number will be limited to 250.

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending Jan. 28, 1905:

Ford, Clyde S., asst.-surgeon, ordered to proceed from Fort Barrancas to Ormond, Florida, on public business.

Brechemin, Louis, Jr., asst.-surgeon, left Fort Baker, California, on thirty days' leave of absence.

Wythe, Stephen, contract surgeon, assigned to duty January 11 at Fort Baker, California.

Merrick, John N., contract surgeon, returned to duty at Fort Missoula, Montana, January 16 from leave of absence.

Brooks, John D., contract surgeon, returned to duty at Fort Meade, South Dakota, January 18 from leave of absence.
Whinnery, Jean C., dental surgeon, arrived at Vancouver Barracks, Washington, January 17 from leave of absence.
Ware, William H., dental surgeon, left Fort Logan, Colorado, January 21 for temporary duty at Fort Wingate, New Mexico.
Wing, Franklin F., dental surgeon, arrived at Fort Meade, South Dakota, January 20 for temporary duty.
Adair, George W., contract surgeon, granted leave of absence for two months about February 1.
Lemmon, Robert, contract surgeon, ordered from Fort Terry, New York, to Fort Wadsworth, New York, for temporary duty.
Holmes, Thomas G., contract surgeon, arrived January 24 at Fort Sheridan, Illinois, for temporary duty.
Marvin, Marion H., contract surgeon, arrived at San Francisco January 15 on one month's leave of absence from the Philippine Division.
Casaday, George H., dental surgeon, arrived at San Francisco January 15 on three months' leave of absence from the Philippine Division.
Sparrenberger, Frederick H., contract surgeon, granted leave of absence for ten days.
Nash, Francis S., contract surgeon, availed himself January 25 of leave of absence for four months.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending January 28, 1905:

Henneberger, L. G., medical inspector, detached from the *Olympia* and ordered home to wait orders.
Graove, W. B., surgeon, ordered to the Naval Hospital, Chelsea, Mass., January 30.
Wilson, G. B., surgeon, detached from the Naval Hospital, Chelsea, Mass., and ordered to the *Colorado*.
Steele, John M., surgeon, detached from the *Colorado* and ordered to the *Olympia*.
Odell, H. E., P. A. surgeon, ordered to the Naval Hospital, New York.
Taylor, J. L., asst.-surgeon, appointed asst.-surgeon, with rank of lieutenant (J. G.) from Dec. 17, 1904.
Crandall, R. P., surgeon, detached from the *New Orleans* and ordered home to wait orders.
Geiger, A. J., asst.-surgeon, detached from the *Prairie* and ordered to the Naval Station, Port Royal, S. C., for temporary duty.
Curl, H. C., P. A. surgeon, detached from duty with the Isthmian Canal Commission on the Isthmus of Panama and ordered to the *Boston*.
Guthrie, J. A., P. A. surgeon, ordered to the *Dixie*, sailing from New York on or about February 4.
Leys, J. F., P. A. surgeon, detached from the Naval Station, Guam, L. I., and ordered home to wait orders via *Solace*.
Stepp, J., asst.-surgeon, ordered to the *Constellation* and to additional duty at the Naval Training Station, Newport, R. I.
Ely, C. F., asst.-surgeon, detached from the Naval Academy and ordered to duty with the Marine Detachment on the Isthmus of Panama, sailing from New York January 31.
Baker, M. W., asst.-surgeon, detached from the *Brooklyn* and ordered to the Naval Hospital, San Juan, P. R.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Jan. 25, 1905:

Earle, B. H., asst.-surgeon, granted leave of absence for three days from Jan. 21, 1905. Granted extension of leave of absence for four days from January 25.
Foster, S. B., A. A. surgeon, granted leave of absence for twelve days from January 24.
Goodman, F. S., pharmacist, granted leave of absence for seven days from January 24.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Jan. 27, 1905:

SMALLPOX—UNITED STATES.

Colorado: Dec. 1-31, Garfield Co., 11 cases; Lake Co., 5 cases; Larimer Co., 18 cases; Las Animas, 1 case; Weld Co., 1 case.
District of Columbia: Washington, Jan. 8-21, 4 cases.
Florida: Jacksonville, Jan. 8-14, 1 case.
Illinois: Chicago, Jan. 15-21, 18 cases, 1 death.
Louisiana: New Orleans, Jan. 15-21, 13 cases, 4 imported.
Michigan: Detroit, Jan. 15-21, 2 cases.
Missouri: St. Louis, Jan. 15-21, 24 cases, 1 death.
Tennessee: Jan. 15-21, Memphis, 10 cases, 3 imported; Nashville, 3 cases.
Wisconsin: Milwaukee: Jan. 15-21, 6 cases.

SMALLPOX—FOREIGN.

Austria-Hungary: Prague, Dec. 25-31, 5 cases.
Brazil: Pernambuco, Dec. 2-15, 85 deaths; Rio de Janeiro, Dec. 26-Jan. 1, 73 cases, 23 deaths.
France: Paris, Jan. 1-7, 10 cases, 1 death.
Great Britain: Dundee, Dec. 25-31, 3 cases; Jan. 1-7, Leeds, 4 cases; London, 1 case; Manchester, 1 case; Newcastle-on-Tyne, 4 cases; Nottingham, 1 case.
India: Karachi, Dec. 17-25, 2 cases.
Italy: Catania, Dec. 30-Jan. 5, 4 cases.
Peru: Callao, Dec. 17, 1 case from S. S. *Leo Valparaiso* via immediate ports.
Russia: Moscow, Dec. 8-14, 2 cases, 1 death; Dec. 25-31, Odessa, 1 case, 1 death; St. Petersburg, 3 cases, 3 deaths.
Straits Settlements: Singapore, Dec. 4-10, 2 deaths.
Turkey: Constantinople, Dec. 26-Jan. 1, 24 deaths; Smyrna, Nov. 20-27, 1 death.
Venezuela: Vicinity of Macuto, Jan. 1-7, 15 cases.

YELLOW FEVER.

Brazil: Rio de Janeiro, ec. 26-Jan. 1, 1 case.
Cuba: Habana, Jan. 10, 1 death from S. S. *Dora* from Laguayra and Colon.
Panama: Panama, Jan. 1-15, 5 cases, 1 death.
Venezuela: Caracas, Dec. 17-Jan. 7, 1 death; vicinity of Laguayra, Jan. 1-7, 6 deaths.

CHOLERA.

Russian Empire: Astrakan government, Nov. 23-29, 6 cases; Nov. 23-Dec. 7, Baku government, 66 cases; Erivan government, 502 cases, 238 deaths; Samara government, 32 cases; Saratov government, Nov. 23-29, 40 cases, 19 deaths; Telisavetpol government, Nov. 23-Dec. 7, 68 cases; Transcaspian territory, Serachs province, Nov. 23-Dec. 7, 47 cases, 27 deaths; Uralsk, Dec. 28, epidemic.
Turkey: General, Nov. 28-Dec. 12, 396 cases, 287 deaths.

PLAGUE.

Arabia: Dec. 25-31, Crater (hospital), 41 cases, 33 deaths; Maalla, 2 cases, 2 deaths; Hadjuff (hospital), 2 cases, 2 deaths; Alia Islands, 5 cases, 2 deaths.
Argentina: Salta State, Dec. 14, 1 case.
Brazil: Rio de Janeiro, Dec. 26-Jan. 1, 20 cases, 11 deaths.
Cape Colony: Port Elizabeth, Dec. 4-10, 2 cases.
Chile: Arica, Dec. 1, present.
Formosa: Dec. 5-11, 44 cases, 35 deaths.
India: Karachi, Dec. 19-25, 54 cases, 51 deaths.
Peru: Eten, Nov. 1-Dec. 11, 24 cases; Lambayeque, Nov.-Dec. 11, 13 cases; Lima, Nov. 16 Dec. 11, 14 cases; Pacasmayo, Dec. 11, present.

Society Proceedings.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting, held Jan. 3, 1905.

Dr. J. Arthur Booth, President pro tem., in the Chair.

Exophthalmic Goiter in a Child.

DR. J. ARTHUR BOOTH reported the case of a girl, 13 years old, whose family history was negative. The child had suffered from measles, whooping cough and scarlet fever in infancy, but there was no history of fright, nor could any other etiologic factor be discovered. The exophthalmos was first noticed when the child was 11 years old. Six months later the enlargement of the thyroid became noticeable. The exophthalmos and thyroid enlargement were very marked, as well as the tachycardia, the pulse ranging between 120 and 140 per minute. There was also tremor, general nervousness, sweating, insomnia and occasional headaches. The interesting feature of the case was the early age at which the disease manifested itself.

Adenoma of the Pineal Gland.

DR. ADOLF MEYER presented a man who, when diving, struck the top of his head. Following this he complained of headache. He became blind in 1898, with chiasma symptoms. In 1899 he had transitory attacks of numbness on the left side of the face, except in the area of the middle branch. From that time on there was difficulty in moving the lower jaw toward the left. There was no atrophy of the masseter. In August, 1900, cerebrospinal fluid began to drip from the right nostril, with considerable relief of the general symptoms. On the few occasions when the flow stopped the patient would become sleepy and stuporous for two or three days. During May and October, 1902, the patient, who was then 22 years old, had several general convulsions. In January, 1904, death occurred in a status epilepticus. The only permanent symptoms had been weakness of the left side of the jaw, a small area of loss of pain sensation of the left lower corner of the mouth, and subjective numbness in the left side of the tongue. The gait remained normal; the knee jerks were both increased; there was no clonus. At the autopsy an adenoma of the pineal gland was found. It had pressed itself through the roof of the midbrain behind the posterior commissure, protruding into the third and fourth ventricle and displacing the posterior corpora quadrigemina; the adenoma had practically no sand and but slight pigmentation. The right lateral ventricle had a funnel-shaped depression in its anterior end, with a perforation through the cortex.

A Unique Case of Fracture Dislocation of the Spine.

DR. J. RAMSAY HUNT reported the case of a man, 45 years old, who gave a history of syphilis followed by suppurating bubo and numerous attacks of gonorrhea. In 1895 he fell three stories through an air-shaft. He was unconscious for a few

minutes. Following the accident he complained of severe pains in the back. Both legs were partially paralyzed. After the accident an angular deformity of the spine was noted, which still exists. It is located about the level of the twelfth dorsal vertebra, and it was safe to assume that the spine had suffered a fracture—dislocation at that point—and that the spinal cord had been injured at the same time. After remaining in bed for two months the legs began to improve, and six or seven months later he was able to resume his occupation as a truck driver. One year after the injury he was suffering no pain or inconvenience, although his legs were not quite as strong as they were before the accident. He could not run as fast as formerly, owing to a slight stiffness in the knees. There was no sensory nor vesical symptoms during this period. For four years or more the patient remained in this condition. About three years ago he began to complain of sensations of numbness and cold in the feet and legs, accompanied by stiffness and weakness. On stooping he felt a numbness in the lower portion of the back, extending down the posterior aspects of the thighs and legs. During the past two years these symptoms progressed slowly and steadily, without any sudden exacerbation, and without acute pain. The left leg was weaker than the right, and it was important to note that this was true of the initial paralysis and the long period of disability during convalescence. The patient now has a well-marked kyphosis, the tip of which corresponds to the twelfth dorsal vertebra. There is a posterior bilateral band of hyperesthesia at the same level. The spinal column is fairly mobile and is not tender to pressure. There is spastic paraplegia of the lower extremities, with the spasticity and clonus more marked on the left side. Babinsky phenomenon on both sides. The skin reflexes are present and there are distinct objective sensory disturbances in the lower extremities. The man is able to stand fairly well with his eyes closed. He has considerable difficulty in urination, with occasional incontinence. His sexual power apparently was unaffected. Coarse myokymic twitchings are present in the back below the level of the lesion; also in the buttocks, thighs and legs, especially their posterior aspect, after exertion and exposure to the cold. Occasionally during the past year he has had sharp shooting pains in the course of the sciatic nerves, causing reflex movements in the legs. These are more pronounced on the left side.

Dr. Hunt's second patient was an elevator operator, 22 years old, who about two months ago fell six stories with his elevator. He was unconscious fifteen minutes after the fall. On examination it was found that he had suffered a fracture-dislocation of the spine, the deformity extending from the eleventh dorsal to the second lumbar vertebra. Six weeks later there was an oval area of anesthesia over the anterior and lateral surfaces of the right thigh. The right knee jerk was absent. The left leg was weak and spastic, with clonus. The Babinsky reflex was not elicitable on either side. A girdle sensation was felt in the lower abdominal region, especially on the right side. There was difficulty on urination.

DISCUSSION.

DR. JOSEPH FRAENKEL thought that pressure on the cord due to an osseous lesion would give rise to more severe symptoms than were present in the first case. He suggested the possibility of a post-traumatic hematomyelia.

Diffuse Cauliflower-Like Puckering of the Cortex in Arteriosclerotic Epilepsy.

DR. ADOLF MEYER showed a brain which showed a form of vascular affection, principally of the cortical terminals, in a syphilitic, 55 years old. There was mental deterioration, with epilepsy, for twelve years, and slowly progressing left hemiplegia during the last year of life. The small vessels of the pia in the affected regions were diffusely occluded. The lesions affected principally the occipital lobes. In the temporal and parieto-frontal regions the convolutions bordering on the sylvian fossa were intact.

DISCUSSION.

DR. T. P. PROUT found that one case he had observed belonged to the realm of the infantile cerebral palsies, on which epilepsy was subsequently ingrafted.

DR. FRAENKEL said that he had seen quite a number of cases in which epileptiform seizures developed late in life, accompanied by some mental deterioration. The diagnosis was of importance, because in a younger person such a condition would be regarded as a general paresis. These seizures could usually be differentiated from those of ordinary epilepsy by the slight focal symptoms.

Officers Elected.

The annual election resulted as follows: President, Dr. Joseph Fraenkel; vice-presidents, Drs. J. Arthur Booth and Smith Ely Jelliffe; recording secretary, Dr. J. Ramsay Hunt; treasurer, Dr. G. M. Hammond; corresponding secretary, Dr. F. K. Hallock.

AMERICAN PUBLIC HEALTH ASSOCIATION.

(*Continued from page 316.*)

Meeting of the Laboratory Section, held at the General Wood Laboratory, Havana, Cuba, Jan. 9, 1905.

The Chairman, Dr. V. A. Moore, Ithaca, N. Y., in the Chair.

The session was devoted largely to water and sewage. Mr. George W. Fuller of New York, chairman of the Committee on Standard Methods of Water Analysis, submitted an exhaustive report on the changes and improvements in the methods that are being used in bacteriologic tests of water. The report was ordered to be distributed to bacteriologists both in this country and in Europe.

Reports of committees on a variety of technical subjects and several papers on bacteriologic topics were read.

The Persistence of Agglutinability in Typhoid Bacilli in Water.

PROF. EDWIN O. JORDAN, Chicago, drew the following conclusions: (1) That the typhoid bacillus may be isolated without special difficulty after association with bacillus coli in tap water and sewage for from at least twelve to twenty days. (2) That some strains of bacillus typhosus retain their property of agglutinability absolutely intact under these conditions.

A Cause of the Formation of Gas in Cans of Condensed Milk.

MR. CHARLES W. DODGE, Rochester, N. Y., stated that bacteriologic investigations of the condensed milk in cans, which were found to bulge shortly after their preparation, failed to find any micro-organisms which, either singly or in combination, would cause the fermentation of either dextrose or lactose under a variety of conditions usually favorable to such fermentations. Neither would the milk itself from such cans cause fermentation in fresh milk. It was found, however, that when dilute solutions of butyric or lactic acid, varying from 1:200 to 1:500 in distilled water, were allowed to act upon the metal of which the cans were made, a slow evolution of gas took place, its rapidity being inversely as the dilution of the acid. It is probable that in the instance cited, the gas was formed not by the bacteria directly, but by the electrolytic action between the metal of which the cans were composed and the acids generated by the growth of bacteria in the milk before the latter was condensed.

An Unusual Channel of Infection with the Shiga Bacillus.

MR. DODGE stated that a laboratory worker accidentally broke a test tube containing a culture of the Shiga bacillus, and some of the fluid was carried to his eye and was probably washed down into the pharynx. Twenty-four hours later typical clinical symptoms of acute dysentery appeared, and lasted for several days. This occurrence of the accident and the infection may be merely a coincidence, but, if not, the occurrence throws light on the rapidity of infection in dysentery in man.

An Improvement in the Technic of the Indol Test.

DR. JOSEPH MCFARLAND and DR. J. HAMILTON SMALL, Philadelphia, devised the following improved technic for determin-

ing the presence of small quantities of indol in bouillon cultures: The culture to be tested receives an addition of one drop of chemically pure sulphuric acid for each cubic centimeter of fluid, this being well shaken. In case the microorganisms produce both indol and nitrites, the red color now makes its appearance. When, however, the organisms produce no nitrites, the usual dilute solution of potassium nitrite is allowed to trickle slowly down the side of the tube and form a layer on the surface of the fluid it already contains. The red color of the nitroso-indol now makes its appearance at the line of contact of the two fluids. Tests on artificially prepared solutions of indol of upwards of 1:750,000 gave positive results. The authors stated that this improved method is applicable for showing the presence of indol in melted gelatin cultures. After the gelatin has hardened, the color ring is fixed for a period of from twelve to twenty-four hours, when the color becomes diffuse.

MR. FREELAND HOWE, JR., detailed some results in the use of different kinds of nutrient media with different periods of incubation, and gave the results of observations on the water of the Susquehanna river at Harrisburg, Pa.

DR. F. C. HARRISON, Guelph, Ont., gave the results of an examination of the water supply of Frederickton, N. B. He discussed briefly the sewerage and water supply systems of that city.

MR. EARL B. PHELPS, Boston, contributed some notes on the determination of the organic nitrogen in sewage by the Kjeldahl process.

Election of Officers of the Laboratory Section.

Chairman, Dr. Wm. H. Park, New York; vice-chairman, Mr. H. W. Clark, Boston; secretary, Dr. John S. Fulton, Baltimore; recorder, Dr. H. D. Pease, Albany.

Travel Notes.

FOUR THOUSAND MILES THROUGH INDIA BY RAIL IN MIDSUMMER.

NICHOLAS SENN, M.D.,
CHICAGO.

(*Concluded from page 320.*)

TAJ MAHAL.

The Royal Tomb, Taj Mahal, at Agra, is the most costly and the most beautiful mausoleum in the world. It was built by Emperor Shahjehan Jeman for his wife, Bagum. It was commenced in 1629 and completed in 1648. It is the most significant landmark of the power, glory and wealth of Turkish rule in India, and Agra to-day is a very important stronghold of Mohammedanism in India, as one-half of its population of 150,000 are Mussulmen. How so much money could be spent in memory of even a beloved empress surpasses all understanding. The entrance to the building which contains the tomb is a specimen of exquisite architectural art. From the entrance a pathway, paved with the purest white marble, leads to the main building, lined by columns of the same material and on each side a row of arbor vitæ, the tree so constantly found in Mohammedan cemeteries.

> "Thou must leave thy lands, house and beloved wife, nor shall any of those trees follow thee, their short-lived master, except the hated cypress."—Horatius.

The passage between pools and fountains and lovely flowers and shrubbery up to the steps of the magnificent marble building characterized by symmetry and beauty in which the precious ashes of the empress have found their last resting place, is unequaled in the world for its exquisite architectural design. The real tomb is in the basement, side by side with that of her husband. The emperor had planned a separate mausoleum for himself of black marble on the opposite side of the Jumna. The building was commenced on a large scale, but death overcame him prematurely and he now shares the ample space of the mausoleum which was intended exclusively for the last resting place of his wife.

DELHI.

Delhi is unquestionably the most interesting city in India. I mean by this not Delhi of to-day with its 300,000 inhabitants, but the Delhi of long, long ago with its ruins of palaces, temples and tombs spreading over a length of ten miles by a breadth averaging a little less than six. In this area are comprised the traditional "seven castles and fifty-two gates" spoken of as far back as 1611 by the merchant Finch. This entire area is literally strewn with remnants of the glory of the Delhi of the past. The palace of the Moguls within the fortress of Delhi is a magnificent specimen of Indian architecture, a combination of symmetry and beauty of design. The road from Delhi to the old town of Qutab, twelve miles distant, passes over and on each side as far as the eye can reach ruins of former wealth and power come into view. In this great stretch of country millions and millions of people have lived and struggled centuries ago when Delhi was the Rome of India. The most conspicuous landmark of ancient history here is the minaret Qutab, 238 feet high, sloping from the foot. Although struck twice by lightning, it remains in a good condition of preservation, a strong reminder of the former powerful Mohammedan reign. The remaining historical ruins of Old Delhi in the immediate neighborhood of the colossal minaret are the mosque and tombs of Altamsh and Adham Khan, noted for their simplicity and architectural beauty. I met here a guard, a native, an old veteran who served under Lord Roberts during the Cabul war. He was proud of the decoration he wore on his breast, but, like all other guards in charge of public institutions, his right hand was converted into a big shallow cup for the reception of a handsome tip when I was ready to say goodbye. I took breakfast at the Rest House, kept by a Turk. In view of the nationality of the host, I expected to enjoy a good cup of coffee. The stuff that was served as coffee was absolutely beyond criticism. I asked to be shown the coffee used in its preparation. I was handed a package wrapped in a yellow paper and containing a pitch black pasty mass. It bore the following delusive label: "Symington's French coffee, prepared as in Paris and blended with the finest chicory." Judging from the taste and smell of the black infusion I became satisfied that it was made from poor chicory without even a blending of coffee. During our return trip the mercury in the thermometer went up to 126 F.

The Royal Palace in Delhi, within the great fort on the bank of the Jumna river, is in a good state of preservation and an imposing example of ancient Indian architecture. The great temples, old and new, scattered all over India, remind one very forcibly of:

> "No nation is so barbarous, no one so savage, whose mind is not imbued with some idea of the gods. Many entertain foolish ideas respecting them, yet all think that there is some divine power and nature."—Cicero.

Their grandeur and beauty suggest:

> "There's nothing ill can dwell in such a temple; if the ill-spirit have so fair a house, good things will strive to dwell within it."—Shakespeare.

A PARSEE WOMAN DOCTOR.

On my arrival at Jaipur the proprietor of the Rustem Family Hotel informed me that the only other guest in the house was a very distinguished Parsee woman doctor. He said that her reputation has spread all over India and that she was well known in the medical circles of Europe. Naturally these statements excited my interest. I was anxious to get some particulars of the medical and surgical work of women in India and to obtain additional information regarding the status of gynecology and obstetrics in that country. At dinner she occupied a seat opposite me at the table. She was a woman well beyond blooming youth with a yellow, freckled face, coal black eyes and hair. She was dressed in flowing silk of different colors, with ruby red in the lead, and displayed a profusion of what

appeared to me cheap jewelry. She displayed a nervous disposition. She brought a new book with her, which she seemed not to read, but glance over in a very nervous manner during and between courses. The attention paid to her by the waiters proved to me that she was no stranger in the house. The proprietor of the house was, like her, a Parsee, a fire worshiper. From the appearance and behavior of the woman I became satisfied that I had a colleague to deal with from whom I had little to expect in the way of professional courtesy, and yet a possible opportunity to increase my stock of medical and surgical knowledge from such a rare source was too tempting not to make an effort to obtain it. With many misgivings I made the attempt very cautiously. Nothing but an occasional timid, lightning glance was exchanged during dinner. After dinner I sent my servant to her room with my card. He returned a few moments later with the discouraging information, "The lady is too tired." Disappointed as I was in receiving this not entirely unexpected news, I had the satisfaction of knowing that I had done what I deemed my duty. The next day I was "too tired," because in the meantime I had ascertained that the much famed Parsee woman doctor knew more about fire worship than medicine. A strict armed neutrality was maintained on both sides during the remaining time we were obliged to live under the same roof and to eat at the same table. A red cloth-bound book was her invariable silent table companion. It was not a medical book. It must have been either a novel or some occult treatise on fire worship. Of the meeting with this woman I can not say, as of all other members of the medical profession that I had the pleasure of meeting on my long journey:

"Friendship, mysterious cement of the soul.
Sweet'ner of life and solder of society."—Blair.

A SICK ELEPHANT.

From Jaipur I made a trip to the old capital city, Amer, its palace and wonderful mountain fortifications, eight miles distant from the present seat of government of Jaipur state. The old city is enclosed by mountain ridges 1,500 to 2,000 feet high, all strongly fortified. The city is now in ruins and nearly deserted. The palace and fortifications are in good repair. It was arranged the evening before that I should go by carriage as far as the base of the mountain, where an elephant would be in waiting, who would take me over the mountain ridge to the old city, and from there up the steep incline to the palace and fortification. When morning came I was informed that the elephant was sick and that a bullock cart would be sent instead. In making inquiry regarding the elephant's sickness I ascertained that the huge beast, quite old, had for several years been suffering at intervals from acute attacks of illness. He would fall down suddenly, with great pain. These attacks would last from three to four hours, when he would recover and remain in apparently good health until the next attack. I am quite confident that this giant beast is the subject of gallstone of enormous size and that it is only a question of a short time before he will die from a complicating suppurative inflammation of the bile ducts. When we came to the foot of the mountain the bull cart was conspicuous for its absence. I was determined to see the old city, palace and fortification, and there was no other alternative left but to make the trip of two miles and the climb of 1,500 feet on foot in a temperature of 132 F. as registered by my thermometer. It is needless to say that when I reached the palace my clothes were not only wet through and through, but my feet and socks were soaked in sweat that ran down the legs in streams.

After seeing the sights the belated bullock cart arrived, and on it I made the return trip. The cart was a first-class one, but what a vehicle! I first tried to ride à la native by doubling myself up in monkey style. As the springless rough cart jumped over stones, into and out of ruts, this position soon became unendurable. If it had not been for my inborn pride to surmount hardships I would gladly have jumped out, paid the owner and his old wife, who accompanied us and who helped her spouse in keeping the bullocks in motion for their trouble, and returned as I came, on foot. As it was, I rendered my position endurable by sitting crosswise in the cart with the numb legs hanging over one of the immense wooden wheels. I made up my mind at the time that as long as I remained in India I would ride on anything else but a bullock cart. It was my first and last experience with this rude antiquated native vehicle.

A CROCODILE TANK.

In the rear of the palace of the mahajarah of Jaipur is a tank covering several acres and containing a greenish turbid water covered for the most part with the scum of algae. It is inhabited by crocodiles and turtles. Stone steps lead down from the palace to the edge of the water. On the advice of the guide we had brought with us from a neighboring butcher-shop delicacies with which to feed the crocodiles. As soon as we reached the edge of the tank a palace guard commenced to make a barking noise and in a few minutes something appeared on the surface of the water which looked like a black log about fifteen feet long. The scuttling motion of the smaller end of the log showed that it was a crocodile on the way to accept the proffered invitation for tiffin. Slowly, lazily, the monster approached, and as it came up to the steps an immense moss-covered head with small slit-like eyes came above the surface of the water with the cavernous mouth wide open, displaying two rows of sawlike teeth. With unerring aim he caught the fragments of meat, which at once disappeared from the tongueless mouth. In less than ten minutes four other crocodiles and a large turtle were our guests. One of the largest of the beasts, a monster at least twenty feet long, took the liberty to climb the steps in order, I presume, to cultivate a closer acquaintance with us. A few blows with a club administered over the skull by the guard brought him to a standstill, and with a tremendous splash he returned to his proper element and disappeared from sight.

A BELATED BRIDAL CEREMONY.

One Sunday afternoon, while driving through one of the principal streets of Jaipur, I heard the ear-killing strains of native musicians. I brought the carriage to a standstill and a procession soon made its appearance, headed by the band. It was made up exclusively of women, from four to six abreast, each of them carrying on the head a basket containing sweets and other small presents. It was explained to me that this procession was in honor of a woman who in four weeks would make her first addition to the census of the city. It was not difficult to locate the bride of eight months in the first row of the procession. The husband was not there. He was at home awaiting the presents from his father-in-law, conveyed to him by the members of the procession. Later in the day I saw another procession on a larger scale announcing to the public a similar event. This custom, which to me appeared a praiseworthy one, is generally observed, and if the census taker of Jaipur keeps his ears ready and his eyes open, he has no difficulty in keeping track of the increase of the population.

FEAST OF THE NEW MOON.

As I was elbowing my way through the crowded streets of Jaipur, on Sunday evening, soon after sundown, I saw thousands of eyes looking in the direction in which the scorching sun had so recently disappeared. I was told that it was the feast of the new moon. It was a long time before I could see the goddess that was the object of worship that evening. I finally could make out the faintest outlines of a pale little sickle—it was the new moon. A great procession formed in honor of the event, headed by a native band, a gaudily caparisoned elephant, a squad of police, and followed by a company of native soldiers. The moon is held in high esteem as a goddess by both Brahmins and Buddhists, and the new moon is always greeted with joy and heralded by a religious procession.

A FAITHFUL ROMAN CATHOLIC PRIEST.

At Abu Road a gentleman, plainly dressed, with full beard well peppered with gray, entered my compartment and at once entered into a lively conversation. He spoke English as it is spoken in England and I took him for an Englishman, probably an employe in the civil service. In removing his cheap gray

helmet I noticed that the top of his head as large as the palm of the hand was shaved. There was now no doubt in my mind concerning the vocation of my new companion. He informed me that he was a Roman Catholic priest, and furthermore, that he was a native of Switzerland; had been in India since he entered the priesthood 26 years ago, and that for eight years he had served as chaplain in the army, and was now on his way to visit a detachment of troops at Ahemabad. It further developed that our birthplaces in Switzerland were not far apart. It was a strange coincidence that I should find here in the wilds of India a countryman whose cradle was so near to mine. Rev. B. Jost, S.J.R.C., chaplain, has spent his whole professional life in India as a missionary and chaplain. He has never taken a vacation. He has seen the horrors of famine and the ravages of cholera, and other devastating epidemic diseases and has but once left his post when, stricken by fever and dysentery, his physician insisted on his being taken to Bombay to save his life. He was tenderly nursed by his brother priests, who for a long time had no hope that he would recover. His vigorous Helvetian constitution and determined will triumphed. He recovered and at once returned to his station. During the last famine, which extended over four years, he spent the money sent to him by friends in buying food, and dealt out rice and peas with his own hands during the hottest months of the year and was the means of saving 600 lives from starvation. He has exposed himself to all kinds of privations and dangers. In one day he dispatched four of the most deadly vipers in his yard and bungalow. All honor to such a brave, faithful servant of the Roman Catholic church.

> "Calamity is an opportunity to show one's virtue."—Seneca.
>
> "Fire tries gold, misery tries brave men."—Ibid.

ELEPHANTA CAVES.

The most interesting place I visited during my stay at Bombay was the Cave Temple in Elephanta Island, one hour and a half by sailboat from the city. The elephants' island is about three miles in circumference, is forest-clad and interlaced with a very pretty creeper, which blossoms more than half of the year. The caves, which in reality are a large Brahmin cave temple, are, according to Hindu tradition, 4,000 years old. There are five caves, but the one usually visited is the Great Cave, which is located about 250 feet above the level of the sea. It is hewn out of solid, hard rock. It is about 130 feet long and of the same width, and 17 feet high. At present it is only used as a place of worship on occasions of Shiva festivals, and in the middle of February a religious fair is held here. The sculptures which ornament the walls are cut out of the rock as well as the columns which support the stone ceiling. All of them show the ravages of time. Some of the columns are destroyed whole or in part, and large pieces have been split off from many of the mural figures.

> "In short, do you not see stones even yield to the power of time; lofty towers fall to decay and rocks molder away? Temples and statues of the gods go to ruin, nor can the gods themselves prolong their dates or give reprieve from fate."—Lucretius.

Of the nine allegorical figures illustrating the Brahmin cult I will only briefly describe the central one which represents Brahma, the creator; that on the right is Vishnu, the preserver, and Shiva, the destroyer, on the left. This is the most elaborate and striking of the sculptures. Brahma's face is expressive of peace, kindness and reflection. If the artist of this exquisite work of art made any mistake it was in sparing stone in forming the thick everted lips. Brahma holds a lotus flower in his left hand; Shiva holds the deadly serpent, the cobra. The significance of the pomegranate is creation; that of the lotus flower preservation, and that of the ugly snake in threatening attitude, destruction. The figures on each side are supposed to be doorkeepers, each attended by a dwarf. The figures of this masterpiece of the sculptor's art of 4,000 years ago are well preserved and a study of them will satisfy any observer of the great skill of Indian artists of that remote period. In front of the open temple is a small tank, in the shallow water of which a number of pigmy frogs enjoyed their childish frolic. No one can visit this venerable cave temple without becoming deeply impressed with the art of India long before the infant Moses was rescued from the crocodile infested Nile and long before Romulus was weaned from the breast of his ferocious wet nurse.

A GREWSOME CHARNEL HOUSE.

The Parsee people who came from Persia to India centuries ago, and of whom there are now about 100,000 in Bombay, are fire worshipers, and neither burn nor cremate their dead. They dispose of their dead by exposing them in a place where vultures can devour them in peace and safety. The Towers of Silence is the place where the hundreds of vultures are fed by the bodies of the dead Parsee. These towers, five in number, and the Fire Temple, the place of Parsee worship, are located on Malabar Hill, in elevated beautiful grounds which have an area of over 75,000 square yards. These grounds are surrounded by a high stone wall and strangers are not admitted without a special permit. The Towers of Silence, the largest of which measures 276 feet in circumference, are all surrounded by high walls, about 25 feet in height, and have an opening on the ground level, through which the dead bodies are carried. The corpse bearers are the only persons allowed to enter the towers. The bodies of the deceased are laid in grooves around the well, which is in the center of the tower. The corpses of children are laid in the center circle, those of the women in the second and those of the men in the outer ring. The bodies exposed in this manner are in a short time stripped of the flesh by the hundreds of vultures that are always in waiting for the arrival of the dead, and then the bones are thrown into the well, where they are allowed to decompose. On the day I visited this grewsome spot I saw hundreds of these bird cannibals perched in neighboring trees and on top of the towers, their gizzards evidently gorged with human flesh, motionless, hanging heads, drooping eyelids, sleeping, dreaming of the next feast on the first corpse of the community of fire worshipers. Should the interval between the dead marches be a long one, these cannibals of the air will be very hungry, a lively struggle will ensue for a share of the body exposed, fingers, toes and other parts of the body will be torn off and carried away to some quiet retreat, to be devoured at leisure. It is in this way that parts of the skeletons of the Parsee dead find their way into the dooryards, streets, gardens and on to house tops, grewsome relics of a grewsome practice of disposing of the dead.

CONCLUSION.

In conclusion, it is to me a source of great pleasure to extend my sincerest thanks to the members of our noble profession whom I had the opportunity to meet and to whom I am deeply indebted for their uniform courtesy and charming hospitality.

ON BOARD S. S. KRONPRINZ WILHELM,
HARBOR OF NEW YORK, Oct. 11, 1904.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Enuresis in Children.

After enumerating and excluding the many possible causes of enuresis and assuming it to be a neurosis, Ullman, in *New York Med. Jour.*, states that an atony of the muscle, an insufficient innervation and hypersensitiveness of the lumbar centers exist and recommends the following outline of treatment:

HYGIENIC.

The child should have an outdoor life and should eat nutritious food at regular intervals. Stimulants, such as coffee and tea, should be interdicted and no liquids should be drunk before retiring. The sleeping room should be well ventilated and the bed should be hard. The child should be taken up once in the night to empty the bladder.

PSYCHICAL AND SUGGESTIVE.

Suggestion in combination with other treatment produces good results in these cases, according to the author. Corporal punishment should not be allowed, as the child's sleep becomes disturbed and he becomes fretful and goes to bed in fear. On the other hand, it is more reasonable to reward the child for not wetting the bed rather than to punish him when he does so. It is just as reasonable to inflict punishment for the involuntary movements of chorea or athetosis as in cases of enuresis. In order to obtain the best results the confidence of the patient must be obtained.

PHYSICAL AND MECHANICAL.

In this connection the different authors recommend massage, sponging with alcohol, friction and sea bathing. Kellogg recommends that the patient be placed in a sitz bath, his feet in a hot foot bath, the head cooled by a wet towel and vigorous friction applied to the hips, back and thighs and continued for three or four minutes at a temperature of 65 degrees F.

Ullman also outlines the method of Csellag, which consists of the following movements:

1. The rectum is freed of feces and massage is applied by means of the index finger to the sphincter vesicæ, the child lying in the lithotomy position. This should be continued by sphincter vesicæ for from half to one minute.

2. A deep circular massage is applied over the hypogastric region for two or three minutes.

3. The patient is placed in the dorsal position, with the knees tightly drawn together, and resists the attempt to separate them and then resists adduction. The same resistance of adduction and abduction is also carried out from the thighs. These movements should occupy two minutes.

4. The patient is then directed to stand against the wall or door and cross and recross one thigh over the other for a period of five minutes.

5. He is then taken across the knee and the lumbar and sacral regions are sharply tapped, producing rapid vibrations. The galvanic current is recommended by some authorities; the negative electrode is placed over the lower dorsal region and the positive is applied to the perineum by means of a small button electrode, using a weak current for a period of eight minutes daily.

MEDICINAL.

The medicinal treatment of enuresis given alone produces negative results. The fluid extract of rhus aromatica, given in five-drop doses three times a day to infants, and increasing the dose with the age to fifteen drops three times daily. Atropin, one grain to two ounces of water, and giving five drops of this solution at 4, 7 and 10 p. m., is recommended. This preparation, according to the author, in connection with the movements mentioned, will produce good results.

A frequent cause of enuresis, according to Holt, is preputial adhesions, which should be broken up and the smegma removed. If phimosis is present it should be relieved by stretching or by circumcision. A narrow meatus should be cut to the proper dimensions. If stone in the bladder is suspected and if micturition is accompanied by straining and painful spasm, the bladder should be sounded. Pinworms in the rectum should be treated by salt water injections or other preparations. The reaction of the urine should be ascertained and if uric acid crystals are found, alkalies are indicated with a great deal of water.

The child should not be overtaxed at school and all excitement must be avoided. The diet must be carefully regulated and coffee, tea and beer prohibited. Sweets and all highly seasoned foods must be eliminated from the diet. Dr. Holt's experience is that the exclusion of meat is not indicated. The amount of water should not be limited except, perhaps, late in the afternoon a less quantity should be taken. The best diet is composed of milk, vegetables, fruits, meat and cereals. Punishment is of no value, and in most cases is harmful. The moral treatment is recommended, appealing to the child's pride and endeavoring to strengthen his will. When the incontinence is only at night the child should be instructed to retain the urine as long as possible during the day in order to accustom the bladder to a greater amount of water. Any anemia, malnutrition, indigestion and constipation must be corrected. Adenoids must be looked for and removed, as they tend to increase the irritability of the nervous system.

As to medicinal agents Dr. Holt ranks belladonna first; it is given in full doses until the physiologic effects are produced and it must be continued, in most cases, for many months. Atropin may be used instead of belladonna and is, perhaps, preferable, as its strength is more uniform. The proper dose should be obtained, as shown by its physiologic effects and continued for at least two months, and then gradually decreased if the incontinence has ceased. Strychnin may be added to the treatment in cases not yielding to the atropin alone. This preparation is especially useful where there is diurnal as well as nocturnal incontinence, for in such cases there is generally a lack of tone to the sphincter and also an increased irritability of the mucous membrane of the bladder. This latter preparation may be given in initial doses of grain 1/100 (.0006) twice daily, gradually increased to grain 1/50 (.0012) three times a day.

Other measures may be resorted to, such as elevating the foot of the bed at night, to keep the urine away from the neck of the bladder, and efforts should be made to keep the child from sleeping on his back. If a contracted bladder is suspected, as shown by a history of incontinence for several years and inability to retain more than one or two ounces at a time, the bladder should be distended daily to its normal capacity by means of warm water.

Sore Throat.

The term sore throat, according to Dr. Leonard Williams in the *Clinical Jour.*, London, includes the several varieties of bacterial involvement, such as the streptococcus and diphtheria bacillus. Aside from the bacterial examination, the knee jerks should be tested and the urine examined for albumin when diphtheria is suspected, as these phenomena, as a rule, occur early in the disease. If diphtheria is found to be the cause of the sore throat and antitoxin can not be obtained early, the author recommends that isolation be carried out in the usual way and a mixture containing the biniodid of mercury be given. This preparation is insoluble in water alone, but is freely soluble in an excess of potassium iodid. The following combination is recommended:

℞.	Hydrarg. perchlor.	gr. i	.06
	Potassii iodidi	gr. xx	1.30
	Glycerini	℥ii	8
	Aquæ q. s. ad	℥viii	240

M. Sig.: One teaspoonful to a tablespoonful three or four times daily.

In the foregoing mixture a double decomposition occurs, forming the biniodid of mercury about grain 1/8 (.008) to the ounce. The glycerin is added in order to increase the tendency to adhere to the fauces and thus increase its local effects. As a bactericide the biniodid is said to be four times as powerful as the perchlorid, and it does not have the tendency to throw down an inert albuminate when coming in contact with the tissues.

The author is emphatic in his statement that this preparation of mercury, excepting, of course, antitoxin, is a more effective foe of the Klebs-Loeffler bacillus than any other drug or inhalation or local application which has ever been used. In all forms of sore throat the heart should be frequently examined as in rheumatism and chorea.

In an ordinary case of sore throat the first thing to be observed is the degree of temperature. The tincture of aconite in one drop (.06) doses every hour, when the effect can be

watched, is very valuable in reducing the fever and in making the patient more comfortable. The author prefers to administer aconite with other preparations which have also a local effect. In cases where a rheumatic origin is suspected, guaiac is recommended as a fair substitute for the salicylates, combined as follows:

R.	Potassii chloratis	gr. x	65
	Tinct. aconiti	m. v	30
	Tinct. guaiaci ammon	ʒi 4	
	Mucil. acaciæ	m. xx 1	30
	Aquæ q. s. ad	ʒi 30	

M. Sig.: This amount to be taken at one dose and repeated every four hours.

As soon as the temperature has fallen the aconite should be discontinued, but the other ingredients kept up for a time. When rheumatism and diphtheria are absent the author recommends rather a complicated combination, including the tincture of iron, which is of value in such cases:

R.	Tinct. aconiti	m. ii-v	12-.30
	Potass. chloratis	gr. x	65
	Liq. ferri perchlor	m. xx 1	30
	Liq. hydrarg. perchlor	m. x	65
	Glycerini	ʒii 8	
	Aq. chloroformi	℥ss 15	

M. Sig.: At one dose and repeated every four hours. Or half the quantity every two hours.

[The dose of potassium chlorate is larger than is usually recommended.]

The mercurial preparation is added to combat any cocci which escape the iron preparation. And the glycerin is added to prolong its local effect in the fauces.

Sciatica.

The disturbances in the sciatic nerve resulting in the symptom complex recognized clinically as sciatica is due to a variety of influences, traumatic, infectious, toxic and circulatory, and, accordingly, no one method of treatment can be expected to be serviceable in all cases. For this reason, when the causative factors can not be directly attacked and removed, the affection is likely to be long continued and attended with exacerbations. The large number of remedies employed is an index of the difficulties with which the treatment of the condition is surrounded. Excellent results have been obtained in a considerable number of instances from the injection of various substances about the nerve at its point of exit from the pelvis and in its course. Dr. J. Lange, in the *Münchener med. Woch.*, reports the successful employment of a modification of the method of infiltration-anesthesia introduced by Schleich. He first produces a wheal over the sciatic foramen and then introduces deeply through a long needle from 70 to 100 c.c. of a solution containing 1 part of eucain-B. and 8 parts of sodium chlorid in 1,000 parts of water. There is no pain as the needle passes through the skin and muscle, but the patient winces when the nerve or its sheath is reached. There is almost immediate relief, although some tenderness and induration persist for a day or two. Sometimes it becomes necessary to repeat the injection in the course of a few days. The treatment should naturally be reserved until other means have proved inefficacious; nor is it to be expected that it should be successful in all cases. The good permanent results observed in the cases treated by the means described are attributed not to the small amount of eucain introduced, but rather to the mechanical effects of the isotonic solution employed.

De Blois of Trois-Rivières lauds the fine results he has obtained with electricity in old, rebellious cases of sciatica. He uses the Morton current combined with static douches and sparks. In one of the six cases he describes in detail in the *Bulletin Méd. de Quebec*, the sciatica had persisted for two years, rebellious to the salicylates, massage and other measures, including other forms of electricity. During three months and a half he gave static douches for twenty minutes every second day, with sparks on the spine and over the affected nerves. Alternate days the Morton current was applied and superheated air locally for thirty minutes three times a week. By the second week the patient was so much improved that he could return to business, and by the end of three months and a half he was permanently cured. No recurrence has been observed in any case thus treated. His experience with the Morton induced static current has been equally favorable in neuralgia, lumbago and all kinds of muscular pains, as he relates in detail.

Medicolegal.

Contract with Health Officer to Care for Smallpox Cases.—The Supreme Court of Iowa says, in the case of Dewitt vs. Mills County, that, in December, 1901, an epidemic of smallpox broke out in the city of Glenwood, and the plaintiff was employed to render all necessary medical services to those afflicted with the disease. In an action brought to recover for such services, that part of the answer alleging that at the time of entering into the contract the plaintiff was a member of the city council of Glenwood, and also health officer of its board of health, was stricken out, on motion, as being immaterial and irrelevant. The ruling was correct. Glenwood is a city under special charter, and the board of health consisted of five members designated by the mayor. The plaintiff was not one of these, and there is nothing in the statutes prohibiting him, in an emergency, from being employed by the board of health at an agreed compensation. Section 1026, Code. This was not subject to the approval of the council, and the contract was not invalidated by Section 943 of the Code, prohibiting any member of the council from becoming "interested directly or indirectly in any contract for work or service to be performed for the corporation." The corporation referred to is the city, and, as the service was not to be rendered for it, but at the expense of the county, the statute does not apply.

Pregnancy and Miscarriage Not to Be Anticipated.—The Court of Appeals of Colorado says, in town of Florence vs. Snook, a personal injury case brought against the town, that pregnancy is not a usual and natural condition of women. It is an unusual and peculiar condition or state of health. A miscarriage can only result from an injury to a woman when in this unusual and peculiar condition, and, when relied on to increase the damages claimed, must be pleaded. The only authority cited opposed to the above doctrine was Tobin vs. Fairport, N. Y., 12 Supp. 224—a ruling by the judge of the Circuit Court of Monroe County, New York, on a motion for a new trial. But the Court of Appeals of Colorado says that the reasoning of the judge in the case cited was not at all convincing, and it is not inclined to be controlled thereby. No authority other than the Tobin case, it says, was cited, and an exhaustive examination failed to discover one in which the point under consideration has been expressly ruled. However, in a great many of the cases examined it appeared that the pregnancy of the plaintiff and the resultant miscarriage were alleged in the complaint, which would indicate that such allegation was deemed necessary.

Treatment of Dislocation of the Clavicle.—The Supreme Court of Iowa says, in the malpractice case of Tomer vs. Aiken and another, that the plaintiff suffered a dislocation of the clavicle from the acromion process. Dr. Aiken was called, but refused to treat the patient unless another physician were present. The family explained that they had been unable to get any one else, and the physician then sent for Dr. Trout to assist him. On his arrival Tomer was examined, and, according to four witnesses, the physicians announced that the collar-bone had been fractured or broken. Two of these were uncertain of the language used, while the physicians testified they concluded that it was a dislocation only, and Dr. Aiken that he had explained to Tomer that the collar-bone was broken away from the scapula; and in this he was confirmed by another witness. While the physician, in trying to explain the injury so as to be within the comprehension of those not familiar with medical terms, may have been misunderstood, yet, the court says, the evidence was such as to leave the question as to whether the case was properly diagnosed an open one for the jury's

determination. If it be conceded, however, that the physicians declared it a case of fracture of the clavicle rather than dislocation, they were not liable unless improper treatment followed. No one claimed on the trial that the clavicle had been fractured, nor was there any evidence that the dressing applied was adapted peculiarly to remedying that defect. If suitable at all, it was as appropriate to the reduction of a dislocation. In these circumstances there was no occasion to submit the issue raised in the first count of the petition that, because of a mistake in the diagnosis, the plaintiff had been treated for a fracture rather than a dislocation, to the jury. If the treatment was such as reasonable skill and care exacted for the cure of a dislocated clavicle, the defendants were not liable, regardless of what their diagnosis may have been; otherwise they were. Was the dressing such as should have been used in reducing the dislocation and securing rearticulation? Ordinarily, little difficulty is experienced in reducing the dislocation. The trouble is to retain the bones in a position so that articulation will be effected. The narrow extremity of the articulating surface, the movability of the shoulder, the contraction of the muscles, and the possibility of ligaments falling between render the result somewhat experimental. In applying the dressing difficulty is experienced in securing a purchase which will hold the bones on the same level. A physician on whose testimony as an expert the plaintiff relied, freely admitted that "there is no assurance under any form of treatment that the bone is going to stay there," and testified further that "the results are not always satisfactory under any form of treatment, but the majority of them get well. Complete is more difficult than incomplete dislocation, but is sometimes successful. The majority are successful under modern methods." In this view all the physicians concurred. Failure to effect a cure under such circumstances, the court continues, furnishes no evidence of want of care or skill. The patient suffered considerable pain, but this, as the evidence showed, may have been incident to the character of the injury. The accident occurred on Wednesday, and Dr. Aiken did not call again until the Sunday following, and not again until a week from that day. If the injury required no attention during the intervals, he was not chargeable for neglect, if any there was; and in determining whether he was negligent, another physician's custom in his own practice could not be accepted as the criterion. That must necessarily depend on the custom or practice in similar localities in the treatment of such injuries. But if Dr. Aiken was negligent in not attending his patient as frequently as he should, this was no fault of Dr. Trout. He had nothing to do with the case after the first dressing was applied, and was in no way responsible for anything that happened thereafter, unless resulting from some defect therein; and the jury should have been so instructed. The dressing was put on at about 3 o'clock in the afternoon, and in the evening the plaintiff's attendant tried to reach Dr. Aiken, but could not do so, by telephone. She then telephoned for Dr. Trout, who responded that he could not come, and, on a second inquiry, that he was in bed and could not come. Without other showing save that Tomer was suffering much pain, which is usual in such cases, a physician was asked, in substance, whether under the circumstances disclosed, it would be proper treatment for a doctor to refuse to attend a patient. There was no claim that any relapse or evil consequences resulted. Another physician, in fact, called and thinned the wad under the arm. The employment of Dr. Trout had terminated at the completion of the dressing. He had the perfect right to refuse to be employed further, especially while the attending physician was still in charge of the case. Moreover, he was not advised that Dr. Aiken, who was at home, but temporarily without telephone connection, could not be found. As the case stood then, Dr. Aiken knew nothing of the plaintiff's wish that he call, and did not learn of it till Sunday, the day he had set for his next visit; and Dr. Trout was not in the plaintiff's employment, and was under no legal obligation to attend him. Manifestly, then, the objection to the question should have been sustained. That the answer, consisting of a somewhat extended discourse on medical ethics, was prejudicial, the court entertains no doubt. The court concludes that if the defendants were negligent, it was in the method of dressing adopted. But there was a difference of expert opinion on the subject, and the court decides nothing with reference thereto, except that the value of expert opinion can not be determined by counting noses, and, even though six physicians took one view and one the other, the issue was for the jury to decide. A judgment for the plaintiff is reversed.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

January 21.

1 *Psychiatry in Its Relation to Other Sciences. C. L. Dana, New York City.
2 Subnormal Accommodation and Premature Presbyopia. G. M. Gould, Philadelphia.
3 *Erotomania; Considerations on Its Manifestations and Pathogenesis, with the History of an Instructive Case. J. L. Corning, New York City.
4 *Occupations with Relation to Tuberculosis. J. B. Huber, New York City.
5 *Is Cesarean Section Ever Justifiable in the Management of Placenta Previa? R. Douglas, Nashville, Tenn.
6 *Radiotherapeutic Nihilism. G. G. Burdick, Chicago.

1. **Psychiatry and Other Sciences.**—Dana discusses the relations of psychiatry to economics, psychology, physics, psychotherapy, neurology and internal medicine, pathology and physiologic chemistry, criminology, forensic or legal medicine, and anthropology, and indicates the lines along which work can be carried with mutual help to all, but to the special advancement of a sounder knowledge of the pathology of the mind, the capstone of all the medical sciences.

3. **Erotomania.**—Corning defines erotomania as an enormous erethism of the psychic centers, with its morbid psychosexual ideation, co-existing with depression of the mechanism of normal sexual animality, and constant inhibition of desire. Like other monomanias, erotomania has its root in degeneracy. Consequently, the various physical and mental stigmata may be found in the erotomaniac. Among the more striking physical stigmata are deformities of various kinds, such as malformations or incomplete development, or enormous overgrowth. Hence, malformation of the external ear, asymmetry of the face, unequal development of the two halves of the cranium, harelip, strabismus, irregularity in the shape and position of the teeth, flat, ridged or pointed palate; enormous development of the jaw, observed in criminals, and webbed or supernumerary fingers. Prominent among the mental stigmata are lack of mental equilibrium, hyperemotionality, inordinate impulsiveness, powers of imagination so extraordinary as to attain the dimensions of veritable hallucinations, domination of the mental sphere by delirious ideas, culminating in impulsive, explosive acts; impairment of the will, imperfect development of the moral sense, with consequent impairment of the ability to distinguish right and wrong; and, finally, inordinate egoism and total lack of power to take an impersonal view of anything. The affection may occur in either men or women, but is more common in the former. It is to be confounded neither with nymphomania nor satyriasis, because the generative instinct seems to be entirely wanting. It is an affection of the imagination, a morbid extravagance of the ideal. In its individual manifestations it presents the characters of a love, pathologic and essentially psychic, and devoid of carnal appetite. There is nearly always a tendency to personification. The subject foists his ideality on a living person, or on an inanimate object. Though his intelligence may show him the consequence of yielding to his obsession, he is powerless to resist it. His obsession is usually for one of the opposite sex. Erotomania may disclose itself in youth, but it is really a disease of adult life, coming on after puberty and often ending in dementia. It may

co-exist with nymphomania or some other form of sexual aberration or with mysticism.

4. **Occupation and Tuberculosis.**—The diagram which forms the basis of Huber's paper was prepared by the statistician of the Charity Organization Society of New York City. Fifty-three occupations are considered. The tuberculous death rate of marble and stone cutters is shown to be six times that of bankers, brokers and officials of companies, and is undoubtedly due to the irritation of the respiratory tract by remote, inhaled particles of stone. The mortality among cigarmakers is five times as great as that of bankers, and is due largely to the irritating effects of tobacco on the mucous membranes; but the bad air and the wretchedly insanitary conditions under which these people work are essential factors. Saloon keepers, hotel servants and bartenders show a heavy mortality, as do the hat and cap makers. The tailors and the garment makers, however, have a death rate which would be surprisingly low were it not for the fact that Jews, who, as a race, enjoy a comparative immunity to tuberculosis, monopolize these trades. Glassblowers show the influence of exposure to extreme heat; they are, also, apt to sit for many hours in constrained positions. Among the musicians, the irregular, bohemian life led by many of them is largely responsible for the large death rate, 350 per 100,000. The mortality extremes per 100,000 living in the same occupation are, 92 for the bankers and 540 for the marble and stone cutters.

5. **Cesarean Section in Placenta Previa.**—Douglas attempts to determine the justifiability of cesarean section in the management of placenta previa by presenting a study of methods and results, as follows: De Lee, 30 cases without a maternal death; Fry, equally successful in 14. Hirst collected 104 cases, with a death of only one mother. Sloan Maternity, New York, maternal mortality, 12 per cent. Boston Lying-in Hospital, 75 cases, maternal mortality, 10.16 per cent. Strassmann, in a series of 231 cases, found a maternal mortality of 9.25 per cent. Douglas, 12 cases, with a death of two mothers. Dorland collected 88 cases of central attachment of the placenta, with a maternal mortality of 22 8/11 per cent. Schauta finds 18 per cent. of mothers lost in 50 cases of placenta previa centralis. As to infantile mortality, Douglas quotes these figures: Hirst, 50 per cent.; Sloan Maternity, 45 per cent.; Strassmann, 6 per cent.; Schauta, 70 per cent. Fry lost 9 children in his 14 cases, in which all the mothers were saved. Douglas says that in a series of cases of placenta previa one may expect a maternal mortality of 10 per cent. and a fetal mortality of 50 per cent. In central attachment of the placenta, maternal mortality, 20 per cent. and fetal mortality, 75 to 85 per cent. As to the subsequent history of 80 patients who had suffered from placenta previa, Radtke found that 30 per cent. were sterile, 23 per cent. aborted at subsequent pregnancies, 57 per cent. suffered from anemia, vertigo, headache, etc. Endometritis, laceration of the cervix and of the perineum and other pathologic conditions were found present. As to cesarean section for placenta previa, Deaver, in 24 cases, had a maternal mortality of 20 per cent. By selecting from these cases the patients that were proper subjects for the operation, the maternal mortality is reduced to 18.75 per cent. The fetal mortality is reduced to 56 per cent. These are the results in placenta previa with rigid cervices and other unfavorable conditions. Douglas is firmly convinced that the maternal mortality can be reduced below 10 per cent., but does not anticipate a reduction in the fetal mortality below 50 per cent. He says that cesarean section is indicated in cases of central attachment of the placenta in a primagravidia with an undilated and rigid cervix, with moderate hemorrhage, a viable child, and when the operator is a capable abdominal surgeon. The contraindications to the operation are an exsanguinated patient, or one who has been subject to various obstetric efforts, the presence or probability of infection, a dead fetus, and an unskilled operator.

6. See abstract in THE JOURNAL, xliii, p. 908.

Medical Record, New York.

January 21.

7 Contribution to the Etiology of Malaria, and to the Analysis of Some Relations of Meteorology to Chemical Pathology. H. Wakefield, New York.
8 *Use of Sulphate of Copper Alone and in Combination with Lime for the Destruction of Mosquito Larvæ, as a Deodorant, and as a Disinfectant. A. H. Doty, New York.
9 The Subconscious Self. J. A. Gilbert, Portland, Ore.
10 *Some Painful Affections of the Feet; Their Diagnosis and Treatment. C. Ogilvy, New York.
11 *Inflamed Appendix in an Inguinal Hernia, Simulating Strangulation. J. E. Golding, Brooklyn, N. Y.

8. **Sulphate of Copper as a Destroyer.**—The investigation carried on by Doty at the New York Quarantine Station covered the following points: 1, The use of copper alone, or in combination with lime, for the destruction of mosquito larvæ; 2, as a deodorant; 3, as a disinfectant. He found that in the destruction of mosquito larvæ and as a deodorant the use of copper in combination with lime is more effective than when used alone. This mixture destroys the larvæ by rapidly removing from the water in which they are contained the organic matter or nourishment on which they depend for life, and that this result is not due to a toxic effect produced by the copper or lime. In swamps or bodies of water covering large areas, where fresh water and organic matter are constantly being added, the use of the mixture is hardly practicable, and its value in these instances is not very apparent. However, in collections of stagnant and offensive water, where the mosquito larvæ are frequently found in enormous numbers, the mixture of copper and lime, one pound of copper and one pound of lime to ten gallons of water added to 500 gallons of water to be experimented with, is of great value, inasmuch as it not only destroys larvæ but deodorizes the offensive fluid. In swamps, etc., where there is usually but little sunlight, and where there is the most active propagation of the mosquito, there is no doubt, says Doty, as to the superiority of petroleum, not only for the destruction of the larvæ but in driving away the winged insects. Doty suggests the use of copper and lime, or petroleum, only when it is impossible to carry out the scientific and radical measures for the extermination of the mosquito: that is, proper drainage and the observance of the laws of modern sanitation. The action of the mixture as a deodorant is rapid and permanent: it is practically harmless, and is cheap and easily made, and seems to comply with the requirements of a typical deodorant. Furthermore, its range of usefulness is extensive, as it can be employed equally well for deodorizing solids or fluids. Experiments to determine the germicidal value of sulphate of copper are now under way in the laboratory of the quarantine station. In tests made with typhoid bacilli in distilled water, tap water, water from sewers, and broth, it was found that in distilled and tap water a solution of 1 to 10,000 killed in one hour. In distilled water a 1 to 100,000 solution killed in two hours, while in tap water it required from six to eight hours to produce the same result. In water taken from street sewers a 1 to 1,000 solution was required to kill typhoid bacilli in one hour, while in broth it required a 1 to 300 solution for this purpose. A 1 to 10,000 solution in distilled water killed the cholera organism in twenty minutes.

10. **Painful Affections of the Feet.**—Ogilvy emphasizes the importance of proper care and treatment of affections of the feet, describing, in particular, eversion, flatfoot, metatarsophalangeal pain, and painful heel. Eversion is the most common deformity. It is usually termed weak ankle. It results in a breaking down of the arch of the foot and flatfoot. An early diagnosis is of importance, for it is very difficult to transform an everted, painful foot with a broken down arch into one which is capable of performing all its functions without pain or discomfort. The treatment of these various conditions is described in detail. The anatomy of the foot and the subject of proper footwear are also considered.

11. **Appendix in Hernial Sac.**—Golding's patient complained of pain in the right inguinal and scrotal regions, vomiting and constipation. Examination revealed a firm, tender tumor in

the right side of the scrotum, over which the skin was red and glazed. The tumor was irreducible, dull on percussion, not translucent nor fluctuating, and gave no impulse on coughing. Temperature, 99.2; pulse, 88. On opening the sac, about eight ounces of clear straw-colored fluid escaped, and the sac was seen to contain an elongated body about ten inches long and one inch in diameter, which was intimately adherent to it. This body was separated, and on incising it it was found that the appendix occupied its center and was surrounded by a thick mass of inflammatory connective tissue. Golding deems two points in the case worthy of note: 1. The unusual length of the appendix. 2. The similarity in the symptomatology of strangulation and an acutely inflamed appendix occupying a hernial sac.

Medical News, New York.

January 21.

12 *Precautions Used by the New York City Department of Health to Prevent the Spread of Contagious Diseases in the Schools of the City. Thomas Darlington, New York.
13 Relation of Cholin to Epilepsy. (To be continued.) Julius Donath, Budapest, Hungary.
14 Some Ocular Reflexes (Psychoses). S. W. S. Toms, Nyack-on-Hudson.
15 Case of Postdiphtheritic Paralysis. W. J. Butler, Chicago.
16 Cystoscope as an Aid in Genitourinary Surgery. Follen Cabot, New York.

12. **Medical Inspection of New York City Schools.**—Darlington describes the medical supervision of the schools of the city of New York and the precautions that are taken to prevent the spread of contagious diseases. The Board of Health appropriates annually a sufficient sum to appoint 150 school inspectors at the rate of $30 a month, each inspector being assigned one or two schools. The schools are visited daily, and the inspector examines all children, whom the teacher has sent to his office in the school, suspected of having any contagious disease. Any case of measles or scarlet fever is visited at once by a diagnostician of the department; if the diagnosis is confirmed the usual steps are taken to prevent the spread of the disease. In the case of diphtheria, the inspector secures the material for making a culture. A daily list of all contagious diseases is sent each day to each school in the city, thus enabling the school to send home any child from a family where contagion is reported. Each inspector has about 5,000 children under his charge, whom he is required to inspect once a week. Inspectors must visit all public schools assigned to them before 10 a. m. each school day. The first visit is called the morning inspection, and consists in calling at the schools to inspect all children isolated by the principal as possibly sick with some contagious disease; all children who have been absent from school for a few days; all children excluded from school attendance. A routine inspection consists of a class-to-class examination of each child present. The children march by the inspector, pull down their own eyelids and open their mouths wide, the inspector making a visual inspection as the child passes him. If the child is suspected of having any trouble which is not quite evident, it is ordered to the inspector's office in the school for a more thorough examination. Each child excluded from school is given a properly filled out exclusion card in a sealed envelope furnished by the department. The inspectors are required to make daily reports. The inspector must ascertain from the principal the names and addresses of all children absent from school for a few days for no known reason. These addresses are visited by the inspector to ascertain the cause of absence. Thus many unreported cases of contagious diseases have been found. Janitors and their families are not allowed to occupy apartments in the school buildings. Children with acute eye disease and pediculosis, showing signs that they are under treatment, are allowed to attend class. The nursing system in force in New York was established for the purpose of caring for communicable diseases, such as pediculosis and conjunctivitis. Each nurse is required to keep a record of all cases treated by her and she has to visit at their homes all children excluded from school when they did not return for reinspection on the day appointed by the school inspector; also to instruct parents in the proper way of caring for children's heads at home. Cases attended by the school nurse are pediculosis, conjunctivitis, ringworm, impetigo, favus, molluscum contagiosum and scabies. The diagnosis is sent to the nurse by the school inspector and she treats the cases accordingly, the supplies required for such treatment being furnished by the department of education. At the present time there are nineteen school nurses in the borough of Manhattan. In order that children excluded from school could be followed and watched closely to see that the instructions given them by the medical inspector were observed, a card-index system was adopted. This system provides a card for each class in each school. On this record is kept of every case of contagious disease, with complete data. Because of the many cases of trachoma existing among school children, it became necessary to give the inspectors special instruction for the purpose of becoming better qualified in the diagnosis of this disease, and to establish an eye hospital and dispensary of the department of health. During the school months there were four operators and four clinicians, also two anesthetists. The total number of children treated at this hospital during the year 1903 was 15,936. The inspectors also are required to make throat cultures of all children showing the slightest redness and hypertrophy of the tonsils. Two inspectors are assigned for the work of vaccinating school children. No child is accepted in the public schools unless it can show either a white certificate stating the age on which vaccination was performed, or a yellow certificate of successful vaccination. While the department does not directly compel a child to be vaccinated, it does enforce the law that if the inspector in charge of the school deems vaccination necessary the child must be vaccinated or it will not be allowed to attend school. Darlington mentions the following as being outside of department control: 1. Proper care of the children's outer garments at schools; 2, proper aëration of classrooms; 3, proper lighting; 4, ample accommodation for each child; 5, sufficient playground facilities; 6, establishments of baths in public schools; 7, examination and compulsory care of the children's teeth and aural cavities. Examination and correction of refractive errors; 8, correction of deformity of locomotor apparatus; 9, exclusion of all cases of nervous disease; 10, segregation of children with inferior mentality.

New York Medical Journal.

January 21.

17 *Abuse of Water-Drinking in Disease. Maurice Manges, New York.
18 Surgical Cure of Intractable Dyspepsia, Depending on Gastric Ulcer and Its Complications. Wm. D. Haggard, Nashville, Tenn.
19 Pathology and Treatment of Diabetic Gangrene of the Lower Extremity. H. J. Whitacre, Cincinnati.
20 Use of Rubidian Iodid in Optic Atrophy. P. Bartholow, New York.
21 Present Status of Railway Emergency Work. (Concluded.) U. F. Martin, New York.
22 *Meralgia Paresthetica Following Typhoid. L. L. Von Wedekind, Washington, D. C.
23 Vasodilators and Contractors. G. W. Greene, Auburn, N. Y.
24 *Delayed Results of a Wound of the Brain. P. F. O'Hanlon, New York.

17. **Abuse of Water Drinking in Disease.**—Manges calls attention to some facts in this connection that are not heeded as well as they might be by physicians. The normal quantity of water for a healthy adult, exclusive of the water contained in food, is about 1½ to 2 liters a day. Only a small portion of the water ingested is absorbed by the stomach, the maximum quantity being 10 per cent. The other 90 per cent. is passed on into the intestines. Every drop of water introduced into the system must be excreted from it, directly or indirectly, by the heart; hence, the larger the quantity of liquid introduced, the greater the amount of energy demanded of the heart for its disposal. The functions which are principally affected by water drinking are, first, metabolism; second, temperature; third, circulation, especially the heart; fourth, glandular secretions, and fifth, peristalsis. Diuresis does not depend on the quantity of water introduced into the body, but on the blood pressure from the kidneys. When the heart is no longer competent, the daily quantity of water should be restricted to 1¼ liters, not including the water con-

tained in food. In the earlier stages of nephritis, when good compensation exists, this restriction is advisable as a prophylactic measure. On one day in the week the patient is allowed to drink as much as he pleases. This insures the removal of any nitrogenous salts which might have accumulated. Manges' experience has proved that the results obtained from such restriction of water are decidedly better than those following the unrestricted use of water. In heart disease, the abuse of fluids is less evident, but none the less serious, in its consequences. A routine use of stenciled treatments wrecks many a compensation or converts latent into actual cardiac disease. This is especially true at the various spas. The chronic hyperemia of the kidney, the existence of dropsy and the hydremic plethora and anemia in advanced cardiac conditions are sufficient indications of the need of great care in warning patients against too much liquid in these conditions. The object should be to regulate the blood pressure in the kidney rather than to crowd more work on the already struggling heart by carelessness in fluid regulation. In chronic gastric and intestinal disorders the significance of this abuse can be more regularly recognized. Water has little effect on metabolic disorders. As regards free flushing for the removal of calculi or gravel, etc., Manges advises that we always first ascertain the condition of the circulation and then be sure that the increased intake of water be represented by an adequately greater amount of urine. In acute infectious diseases and in septic conditions we must also guard against the dangers which may follow from crowding too much water at ordinary temperatures. The water should always be given cold, and in frequent, small quantities. He strongly condemns the practice of simply directing the patient to drink as much water as possible without considering the condition of the heart, circulation and kidneys.

22. **Meralgia Paresthetica Following Typhoid.**—In this patient Wedekind found almost complete anesthesia of the external and anterior aspects of each thigh, the outline on each being identical, one spot about the size of a silver dollar, of exquisite hyperesthesia, along the inferior line of demarcation on the right thigh only. Digital pressure produced deep-seated pain like that in the subperiosteal abscess. Myalgesia was general in both thighs and legs after continued exercise, but disappeared completely after a long rest. A spot on the right side of the chest, three inches below and to the right of the nipple, suddenly flared up and burnt for a moment and as suddenly ceased. There was awkwardness and uncertainty in his gait, suggesting partial loss of control of co-ordination. The treatment has been rest, strychnin and massage; the results, not great. The personal history is absolutely negative.

24. **Delayed Results of Wound of Brain.**—O'Hanlon relates the case of a man who, during an altercation, was shot in the head, the bullet entering through the temporal bone. No ill results followed until about the third month afterward, when the man was taken with fits, which recurred at irregular intervals for a period of about fifteen months, when the patient died. Autopsy revealed a bullet resting beneath the anterior lobe of the right hemisphere at the base. The track of the bullet was plainly visible through the brain tissue, beginning at the left frontal lobe. An examination of that part of the brain, broken down into an abscess, showed a small piece of lead, to which adhered a sharp piece of bone, which had set up the irritation resulting in the formation of the abscess.

Boston Medical and Surgical Journal.

January 19.

25 Humane Treatment of Malignant Disease from a Surgical Point of View. J. C. Munro, Boston.
26 Brief Consideration of Some of the Results of the Surgical Treatment of Cancer of the Stomach. R. H. Fitz, Boston.
27 *New Method of Performing Gastroenterostomy. A. H. Gould, Boston.
28 Management of Diabetic and Non-Diabetic Glycosuria. (To be continued.) Heinrich Stern, New York.
29 The Brown-tail Moth Eruption. H. P. Towle, Boston.

27. **New Gastroenterostomy.**—Gould has devised an operation for gastroenterostomy which is founded on the following principles: 1. That the pylorus should never be closed merely to insure the patency of the artificial opening. 2. That the gastroenterostomy opening should be so constructed that it will remain open of itself. 3. That an enteroenterostomy should be performed between the proximal and the distal coils of the jejunum. 4. That as much as possible of the food should be prevented from entering the stomach without entirely cutting off the jejunal patch from the protection of the bile against the eroding effect of the gastric juice. The stomach is delivered, and the posterior wall is exposed in the usual way. The mesocolon is torn through for a distance of two and a half inches in a direction parallel with the blood vessels and opposite the lowermost point of the greater curvature. The stomach clamp is applied at right angles to this curvature, taking up a fold about three and a half inches in length, and leaving a margin of one inch between the end of the fold and the greater curvature. The fold is incised and the redundant mucous membrane is removed in the usual way. The edges of the incision are seized with forceps at points midway between the two angles and pulled apart as far as possible, thus making the incision run parallel to the greater curvature. The stomach clamp is again put on, leaving a good margin of free edge for subsequent sewing. The ends of the incision, as originally made, will now be placed in the middle, and will have a tendency to sag unless clamped tightly. The jejunum is brought out and a longitudinal fold three inches long is clamped about ten inches from the beginning of the jejunum. The first seromuscular stitch is next placed. Each end of the continuous stitch is left long for future use. The jejunum is opened at a point opposite the middle of the stomach incision and enlarged a short distance either way gradually, until the corners of the stomach and jejunal openings are exactly matched. The cut edges are sewed together with a No. 0 chromic continuous stitch, which starts in the middle of the incision, half way between the two corners, and goes outward to the corners on either side. The first corner is turned and the thread tied. After turning the second corner the stitch is carried over the front and tied to the end left at the first corner, making a perfectly firm and accurate approximation of both corners. The clamps are removed and the rough edges on the front of the suture are buried with a continuous seromuscular stitch. The long end left by the first seromuscular stitch is commonly used for this stitch over the front. An interrupted seromuscular stitch is placed at either angle of the anastomosis, about one-quarter of an inch away, as an extra support. The edges of the incised mesocolon are finally caught down with interrupted stitches to the stomach around the anastomosis. Gould next makes what he deems a successful and permanent valve by inverting the intestine transversely instead of longitudinally. This technic requires three or more layers of sutures; the first are interrupted mattress stitches placed around the circumference of the gut as if an end-to-end suture had been made. This rolls in the bowel circumference and forms a circular constriction. The interrupted stitches are followed by two layers of continuous stitches, which turn in still more of the bowel and thus make a small diaphragm across the lumen. By this procedure the proximal coil is shortened about three-quarters of an inch. The site of the valve should be about three and a half inches below the gastroenterostomy. A lateral anastomosis is made about one inch below the valve. Before closing the anastomosis, the clamp is removed and a blunt instrument introduced upward in the coil to ascertain whether the artificial diaphragm is wide enough to obstruct the lumen. If the inturned edge is too scanty, another continuous stitch is placed around the bowel until exactly the proper amount of obstruction has been made. The enteroenterostomy is then completed and the abdomen closed.

St. Louis Medical Review.

January 14.

30 Control of Municipal Medical Institutions; with Special Reference to the City of St. Louis. John Green, Jr., St. Louis.

31 Woman, Education and Maternity. William Lee Howard, Baltimore.
32 Synopsis of the Nutrition of Man. (To be continued.) Walther Nic Clemm, Darmstadt, Germany.

Lancet-Clinic, Cincinnati.

January 21.

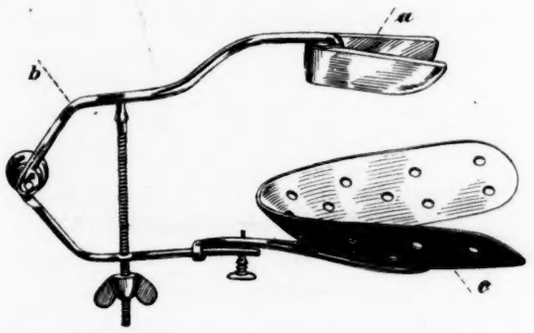
33 Criticism of Recent Surgical Literature on Diseases of the Stomach. Henry W. Bettmann, Cincinnati.
34 Tenotomy of the Tendo-achillis in Partial Amputations of the Foot, also in Oblique, Compound and Comminuted Fractures of the Tibia and Fibula. J. P. Webster, Chicago.
35 The Radiogram in Orthopedic Diagnosis. Albert H. Freiberg, Cincinnati.
36 Ethics of Gonorrhea in the Female. E. S. McKee, Cincinnati.

Annals of Surgery, Philadelphia.

January.

37 *An Adjustable Metallic Interdental Splint for the Treatment of Fracture of the Lower Jaw. Rudolph Matas, New Orleans.
38 *Wounds of the Liver. B. T. Tilton, New York.
39 Congenital Elongation of the Left Lobe of the Liver. L. J. Hammond, Philadelphia.
40 Surgical Treatment of Chronic Dyspepsia Due to Defective Drainage, and Chronic Inflammation of the Stomach Resulting from Gastric Atony and Dilatation. J. G. Sheldon, Telluride, Colo.
41 Contribution to Surgery of Gastric Ulcer. J. Niemack, Charles City, Iowa.
42 *Penetrating Wounds of the Abdomen. F. L. Hupp, Wheeling, W. Va.
43 *Hepato-cholangio-jejunostomy. A. E. Maylard, Glasgow.
44 Volvulus of the Cecum. E. M. Corner and P. W. G. Sargent, London.
45 *An Operation for Inguinal Hernia. C. L. Scudder, Boston.
46 Luys' Instrument for the Intravesical Separation of the Two Urines. F. P. Vale, Washington.
47 Dislocations of the Patella, with Rotation on Its Horizontal Axis. W. S. Cheesman, Auburn, N. Y.
48 *Matas' Operation for Aneurism. H. B. Gessner, New Orleans.
49 Loss of Entire Lower Lip. S. Watts, Baltimore.
50 Regulable Combined Dropping and Pouring Device for the Administration of Anesthetics. B. C. Pedersen, New York.

37. **Adjustable Metallic Interdental Splint.**—Matas' splint is constructed on the principle of a clamp which holds the entire projecting arch of the jaw (from the chin to the angles) firmly in the grip of a flexible mouthpiece which fits like a gutter over the entire dental arch; and of an external plate or chin cup, which extends from the symphysis to the angle. The mouthpiece and chin plate are both detachable. The chin cup is made adjustable to various degrees of prognathism by a sliding joint fixed by a pin and thumbscrew. The appliance consists of three component parts: 1. The mouth-



piece or dental splint proper (*a*), which is hollowed in three planes to fit loosely over the crowns of the teeth, the groove or gutter broadening from before backward to correspond with the increasing diameters of the molars. The edges of the splint form two flanges or rims, which project downward; the outer flange extending to the neck of the teeth on the outer or buccal side, the inner flange or rim dipping to a lower level, almost touching the gums on the inner or lingual side. This splint is made of block tin and is indented approximately on a level with the bicuspids by two deep cuts which penetrate the gutter to its outer rim, leaving a narrow wedge-like space which is closed at the apex by the outer or labial rim of the splint. The softness and flexibility of the metal of which the splint is made, together with these (Wiley) cuts, allow the operator to adjust the splint to the varying contour of the lower dental arch as it is met in different individuals. The splint is made in three different sizes, for children, for young persons and for full-grown adults. The breadth of the gutter can be altered by stretching and modeling the flanges. The dental gutter is also provided with a deep groove or slot in the center of its inner or labial surface, which fits the hook at the tip of the clamp and holds it very firmly in position when it is locked. 2. The chin piece (*c*) is made of perforated aluminum and is shaped to fit the contour of the jaw. It can be moved backward and forward on a sliding joint, which is adjusted by a thumbscrew and is attached to the lower limb of the clamp. In order to prevent injurious pressure on the skin of the chin, it is padded with cotton, covered with a layer of gauze, and smeared with zinc oxid ointment. 3. The clamp (*b*) which holds the mouth and chin pieces together is made of soft steel and consists of an upper and lower limb, screwed together at a considerable distance in front of the mouth. The upper limb projects from the middle of the mouth and is curved over the lower lip so as to allow the mouth to be closed, a very necessary provision to prevent salivary dribbling and to permit a complete control of the mouth in eating and drinking. The pressure required to hold the jaw firmly in the grasp of the intrabuccal and extrabuccal pieces is obtained by a screw attached by a swivel joint to the upper limb of the clamp, the pressure being regulated by a thumbscrew which acts on the lower limb of the appliance. The chief object of this splint is to immobilize the broken fragments of the jaw without restricting its movements as a whole. It is especially intended for compound fractures of the maxillary arch, whether single or multiple, in which there is a marked tendency to recurrent displacement, and which require frequent inspection and antiseptic irrigation of the aural cavity.

38. **Wounds of the Liver.**—Tilton considers the injuries of the liver and discusses their special signs, prognosis and indications for treatment. The modern tendency is toward early laparotomy. Open wounds should, without exception, be treated by enlargement of the wound, exposure of the liver, and determination of the site and extent of the injury. Care should be taken to examine the entire liver, as a second wound may remain unnoticed and give rise to fatal bleeding. The best methods of stopping hemorrhage are by the use of sutures or gauze packing. If the former are used they should include considerable liver tissue at the edges of the wound and, if possible, go down to its full depth. Gauze packing is particularly suitable for contused wounds, gunshot wounds, and punctured wounds, and is, furthermore, a useful addition to suture. The thermocautery is of very little value in arresting hemorrhage from the liver. The blood and bile can easily be removed by flushing the abdomen with hot saline solution or by dry sponging. Drainage is employed in subcutaneous wounds chiefly for the purpose of arresting hemorrhage. In gunshot and stab wounds with a dirty instrument, it is a valuable means of preventing local infection of the organ or general infection of the peritoneal cavity. As regards subcutaneous ruptures, the mild cases without marked symptoms of collapse or of internal hemorrhage should be treated expectantly.

42. **Penetrating Wounds of Abdomen.**—Hupp reports six cases, 5 of them pistol shot wounds and 1 a stab wound.

43. **Hepato-Cholangio-Jejunostomy.**—Maylard's case was a man, aged 52 years, who complained of pain in the epigastrium and vomiting. The onset of the symptoms was attributed to an accident which occurred twenty-two years previously, when he was struck over the lower ribs on the right side. This was immediately followed by severe pain at the seat of the injury, which continued for several weeks. After that he was subject to intermittent attacks of pain, some of which were exceptionally severe, and on one occasion the attack was accompanied by hiccough and vomiting lasting for twelve days. He generally noticed, after an attack, some yellowness of the skin and conjunctiva, and once there was severe jaundice which lasted for three weeks. On opening the abdomen, Maylard found that the gall bladder was replaced by a shrunken, indurated mass of tissue, embracing the liver, the pyloric end of the stomach and the hepatic end of the

transverse colon. The stomach was not dilated. Neither the pylorus nor the first two inches of the duodenum were obstructed. No constriction could be detected in the colon, but directly opposite the most marked indurated mass a slight indentation was felt, suggestive of the possible healing of an opening through which a gallstone might have passed. There being no obstruction anywhere, the wound was closed. The patient continued in good health for nearly four years, when jaundice set in and he also commenced to suffer from a general constitutional deterioration. There was a marked ventral hernia at the upper part of the median cicatrix. The urine was deeply bile stained and the feces clay colored. Seven months later Maylard undertook to establish a communication between the dilated ducts in the liver substance and the duodenum. The abdomen was opened along the course of the old transverse cicatrix and the incision extended. Extreme matting was encountered. The liver was much shrunken, of a deep mottled purple color and lay high up under the ribs. With much difficulty the jejunum was stitched to the margin of the liver for about two inches by means of a continuous sulphochromic-gut stitch. The liver was then incised for about one and one-half inches, the bowel opened for the same extent, and the opposing surfaces beyond the two cuts were united by interrupted stitches. In order to avoid tension on the stitched gut, the bowel was anchored at the upper part to some adherent omentum. A separate incision was made posteriorly to drain the right lumbar fossa. The patient made an uninterrupted recovery from the operation, but died about a month later from slowly increasing emaciation and weakness. There was no postmortem. On the second day after operation the stools were somewhat darker in color, but further than this no change seemed to have occurred in the general condition of the patient. Maylard concludes that this operation may be safely undertaken without fear of any immediate or comparatively remote dangerous results.

45. **Operation for Inguinal Hernia.**—The facts which Scudder considers important in the operation for the cure of an inguinal hernia are: An ample cutaneous incision; absolute hemostasis; an anatomic dissection of the parts concerned, so that every structure is clearly recognized; the complete isolation of the neck or abdominal portion of the sac; the complete emptying of the sac of both adherent and non-adherent contents; the suture of the hernial sac at the level of the peritoneum of the anterior abdominal wall; the exact suture of the abdominal wall superficial to the peritoneal sutures, including always one or two sutures placed over and above the sutured sac; the minimum of trauma to the cord. He says he has never yet found it necessary or advisable to excise the veins of the cord. Occasionally he has not transplanted the cord in children, and under certain circumstances has not transplanted it in adults. He considers it of comparatively little importance whether the cord is or is not transplanted. He says that he is more and more inclined not to transplant it. He has utilized the fascia of the rectus abdominis a few times to re-enforce the abdominal wall above the inner end of Poupart's ligament, as illustrated by Halsted, but the elaborate method of suture used by Halsted he considers unnecessary, except in unusual cases. After operation by his method the patient is in bed two weeks, on a bed-rest the third week and out of bed the fourth week. A bandage is worn for one month, after being up and about, for the comfort it affords. The operation is described in detail.

48. **Matas Operation for Aneurism.**—Gessner reports the case of a negro, aged 32, suffering from an aneurism of the right popliteal artery, involving the middle and lower portions of that vessel. The tumor was five inches in the long axis of the limb, by four and a quarter inches transversely. He gave a history of syphilis four years before with one year's treatment. The aneurism was treated after the method advocated by Matas, slightly modified to the extent that the walls of the aneurismal sac were brought together directly instead of being turned in on themselves after the method of Neuber. The operation proved successful.

Interstate Medical Journal, St. Louis.

December.

51 German Medical Exhibit at World's Fair. Bacteriology and Experimental Therapeutics. A. Wassermann, Berlin.
52 American Pathologic Exhibit at World's Fair. W. T. Eckley, Chicago.
53 Surgical Lessons from the St. Louis Exposition. Willard Bartlett, St. Louis.
54 The German Hygienic Exhibit at World's Fair. Dr. Breger, Berlin.
55 Remarks on the German Exhibit at World's Fair of Methods to Prevent Infectious Diseases. Carl Fisch, St. Louis.
56 The Fight Against Tuberculosis at the Louisiana Purchase Exposition. Albert E. Taussig, St. Louis.
57 Radiography and Roentgen Apparatus at World's Fair. Bockenheimer, Berlin.
58 "Moulagen" Reproduction of Disease in Plaster of Paris and in Wax Models at World's Fair. M. F. Engman, St. Louis.

Canadian Journal of Medicine and Surgery, Toronto.

January.

59 Treatment of Lupus Vulgaris by Phototherapy, Radiotherapy and Otherwise. Charles R. Dickson, Toronto.
60 Case of Malignant Endocarditis in a Child. W. H. Pepler, Toronto.
61 Coughs and Colds. William F. Waugh, Chicago.

California State Journal of Medicine, San Francisco.

January.

62 Prevention of Tuberculosis. George H. Evans, San Francisco.
63 Diagnosis and Management of Transverse Presentation in the Later Months of Pregnancy. Charlotte J. Baker, San Diego.
64 Second and Fourth Positions of the Vertex. Henry Gibbons, Jr., San Francisco.
65 Appendicitis. Some Points in Its Diagnosis and Treatment from the View-point That Its Cause Is a Strangulation Produced by Distention Behind a Ball-valve. C. Van Zwalenburg, Riverside.
66 Myocarditis, with Special Reference to Disordered Metabolism. (Continued.) W. W. Kerr, San Francisco.
67 Chronic Otorrhea as Viewed by the Life Insurance Companies and the Medical Recruiting Officer. A. Barkan, San Francisco.
68 The Surgical Treatment of Chronic Nephritis. J. Henry Barbat, San Francisco.
69 Unity of the Medical Profession. Edward Ulrich, San Jose.
70 Odor Humane. Charles Anderson, Santa Barbara.
71 Use of the Phorometer in the Centering and Decentering of Glasses. Louis C. Deane, San Francisco.

International Journal of Surgery, New York.

January.

72 Practical Gynecology. W. A. B. Sellman, Baltimore.
73 Relation of Deep Linear Stricture of Large Caliber to Disturbances of Micturition and Recurrent Posterior Urethral Inflammation. G. F. Lydston, Chicago.
74 Essential Remedies in Emergency Surgery. W. C. Abbott, Chicago.
75 Practical Treatment of Diseases of the Eye. T. Cooke, Jr., Baltimore.
76 The Mastoid Operation in Infants and Children. H. Jerecky, New York City.

Journal of the Michigan State Medical Society, Detroit.

January.

77 Ascites and Pelvic Disease. R. Peterson, Ann Arbor.
78 Treatment of Compound Fractures. A. I. Lawbaugh, Calumet.
79 Renal Hematuria of Unexplained Origin; Cessation After Nephrotomy. B. R. Schenck, Detroit.
80 Chronic Proctitis and Sigmoiditis. W. L. Dickinson, Saginaw.
81 Myelitis Complicating Cancer of the Breast; Report of a Case. F. B. Walker, Detroit.
82 Case of Recurrent Vomiting. C. H. Johnston, Grand Rapids.

Maryland Medical Journal, Baltimore.

January.

83 The Midwife Problem and Its Legal Control. G. Steele, Cambridge.
84 Four Great Anglo-American Medical Discoveries. W. R. Stokes, Baltimore.

New Orleans Medical and Surgical Journal, New Orleans.

January.

85 Contract Medical Practice. B. A. Colomb, Union, La.

New York State Journal of Medicine, New York.

January.

86 An Atypical Case of Appendicitis, Presenting Some Unusual Features Found at the Operation. W. B. Reid, Rome, N. Y.
87 Involution Melancholia. Thomas J. Currie, Willard.

Colorado Medicine, Denver.

December.

88 Tympanites, Eructation, Merycism and Aerophagia. C. D. Spivak, Denver.
89 Narcotic Drug Addictions: Pathology, Treatment, Prognosis. Geo. E. Pettey, Memphis, Tenn.
90 Etiologic Aspects of Puerperal Fever. Charles B. Dyde, Greeley.

Medical Standard, Chicago.

January.

91 The Revival of Medical Learning. E. J. Kempf, Jasper, Ind.
92 The Scientific Struggle to Cure Pulmonary Tuberculosis in the United States Since 1882. (Concluded.) Homer M. Thomas, Chicago.
93 Autointoxication and Its Treatment. (Concluded.) Heinrich Stern, New York.
94 Observations on the Medical Uses of the Continuous Galvanic Current. Daniel R. Brower, Chicago.

95 Instrumental Treatment of Chronic Gonorrhea. A. E. Fischkin, Chicago.

Journal of the Mississippi State Medical Association, Vicksburg.

January.

96 Microscopic Diagnosis of Gonorrhea. J. B. McElroy, Memphis, Tenn.
97 Scurvy. H. L. Sutherland, Rosedale.
98 Report of a Case of Streptococcus Infection of the Lungs. C. O. Buck, Lexington.
99 Suggestive Therapeutics. H. H. West, Gulfport.
100 Typhoid and Malarial Fevers. I. Edwards, Morton.
101 The Complications of Gonorrhea. S. Myers, Vicksburg.
102 Are We True to Each Other and Ourselves? H. X. Richardson, Dundee.

Journal of the Missouri State Medical Association, St. Louis.

January.

103 Treatment of Epilepsy. Given Campbell, St. Louis.
104 Scarlet Fever. Robert D. Haire, Clinton, Mo.
105 The Early Diagnosis of Pulmonary Tuberculosis. H. C. Shuttee, West Plains, Mo.

Journal of the Kansas Medical Society, Lawrence.

January.

106 Vascular Keratitis. A. C. Graves, Pittsburg, Kan.
107 Dipterous Parasites of the Intestine. F. E. Schenck, Burlingame.
108 Physiologic Action of *X*-ray. E. M. Brockett, Topeka.
109 The *X* ray. Ida C. Barnes, Topeka.
110 Methods of Detecting Bacillus Tuberculosis in Sputum in Doubtful Cases. Charles M. Gibson, Pittsburg, Kan.

Louisville Monthly Journal of Medicine and Surgery.

January.

111 The Operative Treatment of Hydrocephalus. A. M. Cartledge, Louisville.
112 Orbital Cellulitis, Frontal Sinus Disease, Abscess of Brain—Death. S. G. Dabney, Louisville.
113 Foreign Bodies in the Cornea. Dudley S. Reynolds, Louisville.
114 Hepatitis. D. L. Field, Jeffersonville, Ind.

Journal of Advanced Therapeutics, New York.

January.

115 Some Aspects of Phototherapy. Charles S. Dickson, Toronto.
116 Remarks on High Frequency Currents and Their Therapeutic Action. Walter H. White, Boston.
117 Clinical and Experimental Effects of Electrical Currents of High Potential and Frequency. (Continued.) John H. Burch, Baldwinsville, N. Y.
118 Radiography. (Continued.) Herman Grad, New York.

Albany Medical Annals.

January.

119 The Scientific Method in Medicine. Richard M. Pearce, Albany.
120 Pyloric Stenosis in Infancy; Report of a Case; Gastroenterostomy; Recovery. Henry L. K. Shaw and Arthur W. Elting, Albany.

Indiana Medical Journal, Indianapolis.

January.

121 Cerumen. Fletcher Hodges, Indianapolis.

Kansas City Medical Index-Lancet.

January.

122 Ectopic Pregnancy—A Case Report. H. C. Crowell, Kansas City.
123 Prosthetic Surgery, with Report of a Case, Illustrative. Flavel B. Tiffany, Kansas City.
124 Rectal Valves. J. M. Frankenburger, Kansas City.
125 Bright's Disease. J. McB. Johnson, West Plains, Mo.

Memphis Medical Monthly.

January.

126 Significance of Tube Casts in the Urine. William D. Burns, Memphis.
127 Observations on Abdominal Surgery. E. E. Haynes, Memphis.
128 Some Medical Deductions. G. G. Buford, Memphis.
129 Facts and Fancies in Otology. Richmond McKinney, Memphis.
130 Vulnerable Points in the Human Abdomen. E. M. Holder, Memphis.
131 Shock. Battle Malone, Memphis.
132 Meningitis of Otitic Origin—Recovery. Report of Case. J. D. Hopper, Jackson, Tenn.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

January 7.

1 Pains of Tabes. Wm. R. Gowers.
2 Soft Fibroma of the Larynx and Neck Removed by External Operation Without Opening the Cavity of the Larynx. Felix Semon.
3 Some Thoughts on Pleurisy. G. A. Gibson.
4 *A New Blood Fluke of Man. John Catto.
5 Nature of the Follicle Cells of the Mammalian Ovary. V. Chastel de Boinbille.
6 *Ambidexterity. N. B. Harman.
7 *Case of Cutaneous Anthrax Successfully Treated by Sclavo's Serum. C. R. Lockwood and F. W. Andrewes.
8 *Value of Nitroglycerin in Surgery. Frank Elvy.

4. **A New Blood Fluke.**—When Catto was quarantine officer at Singapore cholera broke out on a passenger ship from China. Some 400 coolies were quarantined. Among them was a Chinaman who presumably had never been away from China before. He died after three days' illness. During life it was found that the right lobe of the liver extended two finger-breadths below the costal arch. The left lobe was a hand-breadth below the sternum, and its percussion dullness merged into the splenic. The spleen was palpable one inch from the iliac crest, and its notch was in line with the anterior axillary fold. The autopsy was held an hour and a half after death. The adipose tissue throughout the body was a prominent feature. The appearance of the peritoneum suggested repeated attacks of peritonitis. The appendices epiploicæ were thickened and in some places matted together. The rectovesical pouch was almost obliterated. Encasing the large intestine was a coat of fat, most marked at the mesenteric attachment. The mesenteric tissues were all thickened and loaded with fat. The liver was uniformly enlarged. Its surfaces were markedly nodular, its borders sharp and irregular, the whole presenting the appearance of a very coarse cirrhosis. Its consistence was greatly increased, but its color was not appreciably altered. The coats of the gall bladder were thickened, and a layer of fat almost completely encased this viscus, which was distended with clear, mucoid, apple-jelly-like material, containing several minute black gallstones. The colon was much thickened. The mucous membrane was swollen, hyperemic and friable, presenting numerous small, circular, superficial erosions and patches of necrosis. The outer coats were very tough, almost cartilaginous, and showed no tendency to ulcerate. The rectum was three-quarters of an inch thick all around and was adherent to the bladder. It nearly filled the true pelvis. Where adhesions had formed, the bladder walls were thickened, but elsewhere it was healthy and nowhere was the vesical mucosa diseased. The sigmoid was uniformly thickened; in tracing the bowel upward the thickening became less marked and more patchy. The coats of the cecum and the appendix vermiformis were hypertrophied, the mucous membrane presenting small patches of ulceration and necrosis. The appendix was provided with a mesentery, and a distended lymphatic could be recognized running along its free surface. The liver and bowel cut gritty on section. The enlarged spleen was pigmented. The stomach, pancreas, suprarenals, kidneys, heart and lungs showed no signs of coarse disease. Sections of the liver and mesenteric lymph glands involved were found to contain numerous small oval bodies having a smooth, stout capsule. Sections of the intestine made later showed ova and filariform embryos in bundles in the mucosa and villi of the large intestine. Subsequently, in sections of the mesocolon, Catto found adult trematodes, male and female, in the blood vessels, the ova in the uterus of the female corresponding in every particular with the oval bodies found in the various viscera. The life-history of this new schistosome corresponds with that of other trematodes, especially the *S. hematobium*. It differs from the latter in that (1) the habitat of *S. hematobium* is said to be venous only, whereas the habitat of the new schistosome is mainly arterial; (2) the ova of *S. hematobium* affect mainly the urinary system and escape from their human host by this channel. In the new species the ova apparently affect exclusively the alimentary system, escaping by this route from their human host. The geographical distribution differs, for no case of bilharziosis has yet been met in China. Catto describes the new organism in detail.

6. **Ambidexterity.**—Harman considers the influences determining our general right-handedness and, incidentally, the persistence of cases of left-handedness. He also demonstrates the present existence of a very general degree of ambidexterity or, rather, co-ordination of function in the arms.

7. **Cutaneous Anthrax Treated by Sclavo's Serum.**—Lockwood and Andrewes report the case of a worker in horsehair suffering from malignant pustule of the cheek. Forty c.c. of Sclavo's serum were injected subcutaneously into the flank and abdomen, and no other treatment was adopted. The tem-

perature was then 102.4, and it rose in the evening to 103; the pulse was 92. During the night the temperature fell to 98.6. For the next two days the patient showed little improvement. The slough increased somewhat in size, and the surrounding edema became much more marked, at times almost closing the eye. The enlargement of the glands at the angle of the jaw increased considerably. There was also some swelling and redness of the fauces. The patient's general condition was good, and no further dose of the serum was given. Three days afterward there was distinct improvement. Seventeen days after the administration of the serum only a small granulating surface was left, which appeared likely to leave a scar scarcely more serious than that resulting from vaccination. The serum treatment thus proved completely successful.

8. **Nitroglycerin in Surgery.**—Elvy calls attention to the value of nitroglycerin in surgical cases, administered in doses of gr. 1/100. He advises its use in incipient senile gangrene and in all cases of impaired circulation in which contracted arterial walls are present. Even when the arteries seemed to be normal he has used the drug with benefit in local congestion.

The Lancet, London.

January 7.

9 *Recurrent Effusion Into the Knee-Joint After Injury. William H. Bennett.
10 Simple Method of Separating and Collecting the Urine Which Is Secreted by Each of the Two Kidneys. W. Bruce Clarke.
11 Pathology and Treatment of the Hernias of Children and Their Relation to the Condition in the Adult. R. Hamilton Russell.
12 *Influence of Rainy Winds on Phthisis. William Gordon.
13 Cultivation of Trypanosoma Out of the Leishman-Donovan Body by the Method of Captain L. Rogers, I. M. S. G. C. Chatterjee.
14 Child Study and the Treatment of Paralysis in Children. Alfred A. Mumford.
15 Diet in Chronic Diseases. John Haddon.

9. **Recurrent Effusion into Knee Joint.**—Bennett considers 750 cases in which the effusion was recurrent, either spontaneously or after another injury, generally so slight that its effect on the normal joint probably would have been unnoticed. He divides his cases into two groups: 1, those entirely independent of any constitutional conditions (509), and 2, those influenced by constitutional conditions (241). In 428 cases in Group I the proportion of males to females was 16 to 1. The youngest patient seen was 9 years old and the oldest was 72. The left knee was concerned in considerably more than half the cases, while in 15 both sides were involved. With one exception, the trouble in the second knee followed that in the first after an interval. The symptoms arising from lesions of the outer side of the joint were less acute than those connected with defects on the inner side; it was also noticed that when the outer semilunar cartilage seemed at fault the symptoms of pain and locking were referred to the popliteal space in at least half the cases. In all such cases operated on recovery followed the removal of the obviously displaced anterior part of the semilunar cartilage. In the total number of 428 cases the symptoms pointed to the inner side of the joint being concerned in 304; to the outer side in 113, and to both sides in 11. Eighty patients were operated on (see Group 2). Fifty-six cases presented no other symptoms than mere recurrence of effusion without noticeable further injury. The affected knee occasionally swelled up without any apparent reason and without inconvenience beyond a slight feeling of weakness. The original effusion had, with two exceptions, come on after a twist or sprain of so slight a kind that it attracted little or no attention at the time. In 12 of these cases which were subjected to operation the internal semilunar cartilage was found to be detached and displaced in 5, the external in 1, and in 1 both cartilages were displaced. In the remaining 5 cases operated on nothing abnormal was detected. Of the 44 cases which were not operated on 30 were treated with complete success by massage, exercises, electricity, etc.; in the remaining 14 the ultimate effect of the same treatment is not known. Bennett says that in recurrent effusion into the knee-joint after injury, independent of constitutional conditions, when the usual methods of treatment had failed to effect a cure, exploratory operation is indicated on the grounds of the probability of internal derangement existing and that extensive displacement of one or even both semilunar cartilages may take place without the recurrence of any of the symptoms which are commonly regarded as characteristic of the lesion. In 21 cases loose bodies were found in the joint. The injury in each case was severe and was followed by excessive immediate swelling. In 14 cases operated on a single fibrous loose body was found in each, the smallest being of the size of a horse-bean and the largest of the size of a cherry. In one of the two remaining cases two ovoid bodies were found; in the other it was evident that the body had been broken off the edge of the articular surface of the femur. Generally speaking, the larger the body the less acute were the symptoms, although the attacks appeared to be more frequent. Only 4 cases of genu valgum were met with in the series. The injury in all cases was indirect, and in each a rapid increase in the deformity followed. In the second group of cases the existence of a constitutional dyscrasia exercised a considerable influence (1) in leading to the occurrence of symptoms from very slight causes and (2) in rendering recovery difficult or impossible unless the constitutional conditions are treated or, at all events, taken into account. In 107 of the 241 cases comprising Group 2, a diagnosis of osteoarthritis was made. In about 50 per cent. the diagnosis was only arrived at with certainty after repeated recurrence of effusion had been followed by some characteristic sign of articular change. The initial injury was invariably slight and generally indirect. In only two cases was a loose body felt before operation; in the remainder attacks of acute pain led to operative investigation; in all the cases explored the loose bodies were found and removed through a longitudinal incision at the inner side of the joint. Males were affected largely in excess of females (4 to 1), the right knee being concerned more frequently than the left. In the treatment of these cases nothing seemed to have more than a palliative effect, excepting the radiant heat bath, massage and electric vibration, which in 23 cases of comparatively recent origin appeared to effect an actual cure. In 30 cases rheumatism and gout acted as underlying causes. In the rheumatic cases a cure was effected, as a rule, by the usual constitutional treatment combined with massage. Operations were performed for the relief of acute pain due to tension; incision appeared to possess no advantage over aspiration, while the healing of the wound after incision was slow. Forty-two cases gave a history of syphilis, the longest period between the original infection and the injury causing the effusion into the knee was 28 years; the shortest period was 3 years. The syphilis in all cases appeared to have been cured. The injury was direct and, as a rule, slight. The right knee was affected more often than the left. In no case was permanent benefit derived until a course of antisyphilitic treatment was adopted. Gonorrheal rheumatism was a factor in 28 cases, malaria in 18, and hemophilia in 3. In 13 cases there was a passive effusion into the joint, such as is prone to occur in young girls during adolescence, if the menstrual arrangements are irregular and, especially, if they are delayed in their onset.

12. **Rainy Winds and Phthisis.**—Gordon finds on investigation that strong rainy winds appear to be remarkably associated with increased prevalence of phthisis, while absence of such winds seems to correspond strikingly with rarity of phthisis.

Bulletin de l'Académie de Medécine, Paris.

Last indexed page 165.

16 (Year LXVIII, No. 41, December 13.) Report of the Distribution of Prizes. Particulars of the Prizes Offered for 1905, 1906 and 1907. About 40 open to the competition of the world. See THE JOURNAL of January 14, page 138.
17 (No. 42.) *Le perborate de soude. G. F. Jaubert.
18 (No. 43.) Alcoholisme, tuberculose, syphilis. Proposition de réforme des statistiques mortuaires officielles. C. Fernet.

17. **Hydrogen Dioxid in Form of a Stable Powder: Sodium Perborate.**—Jaubert announces the production of a powder which, dissolved in water, generates pure hydrogen dioxid. The powder is obtained by the action of boracic acid on sodium peroxid, and he proposes to call it "sodium perborate." The peroxid of hydrogen generated when this powder is dis-

solved in water is chemically pure, and its action is reinforced by the antiseptic properties of the sodium borate. Two pounds of the sodium perborate contain nearly 80 liters of active oxygen. The powder keeps perfectly and can be applied dry to wounds, cavities, etc., the nascent oxygen escaping as it comes in contact with the secretions, or it can be dissolved and thus produce a fresh and potent supply of hydrogen dioxid as required. The perborates of zinc, strontium and calcium can be made in the same way. Robin supplemented this communication with a reference to his suggestion that hydrogen dioxid be used for the water of crystallization, mentioned in these columns on page 83 of the last volume, with reiteration of the importance of the nascent state for the efficacy of drugs.

Revue de Gynécologie, Paris.

Last indexed XLIII, page 1731.

19 (VIII, No. 5, September-October.) *Périvaginite phlegmoneuse disséquante. G. Acconci (Florence).
20 De la jéjunostomie en Y dans la gastrite ulcéreuse grave. A. Monprofit (Angers).
21 *Prophylaxie de la récidive hydatique post-opératoire. A. Martin and F. Dévé (Rouen).
22 *Perforations spontanées de la vésicule biliaire calculeuse dans la cavité péritoneale libre. A. Hallet (Liège).

19. **Dissecting Phlegmonous Perivaginitis.**—Acconci reviews 29 cases in the literature and describes one personally observed. The patient was a healthy iii-para of 29, who was taken sick with evening chills and fever, intense headache, cough and blood-stained sputa. A month later there was a fetid discharge from the vagina with protrusion of what appeared to be a cancerous growth, projecting for from 6 to 7 cm. The fever became higher, the chills more severe, with subdelirium and profound prostration suggesting the typhoid state. This continued for a few days, when suddenly the entire mucous lining of the vagina came away in one piece. After the expulsion of the mass formed by the detached vaginal mucosa the patient rapidly recovered, except for hematometra and two fistulæ, which were cured by an operation later. The affection was evidently primary. The vast perivaginal infiltration did not involve the peritoneum. Only 5 of the cases on record terminated fatally, one probably from pyemia, the others from resulting complications. If diagnosed in time, the perivaginal infiltration might be drained away by scarifications or by incision. This has been done in a few cases and the vagina saved. If seen too late for this, measures to prevent strictures or to cure the consequences are all that can be done.

21. **Prophylaxis of Postoperative Recurrence of Hydatid Cysts.**—Injection of some fluid capable of killing the echinococci before attempting the extirpation of the cyst is a most important means to prevent recurrence later. Its efficacy is confirmed by the experimental tests reported.

22. **Perforation of Gall Bladder into Abdominal Cavity.**—Eleven patients recovered out of 15 operated on after spontaneous perforation of the gall bladder containing stones. This list includes 2 recoveries in Hallet's experience. The conclusions of his monograph on the subject emphasize the importance of prompt operative treatment when cholelithiasis does not yield to medical measures. This is the only certain safeguard against the dangers of perforation later.

Semaine Médicale, Paris.

23 (XXV, No. 1, January 4.) *Comment il faut faire l'appareil de mal de Pott. Calot.

23. **How to Apply the Cast in Pott's Disease.**—Calot is in charge of the Berck-sur-mer children's sanatorium, and he asserts that the successful treatment of Pott's disease is merely a question of applying the cast properly. He describes in detail his simple and practicable method of applying the cast. The article is illustrated by 24 cuts. He reiterates that with casts prepared by this technic he is able to cure every case of the disease wherever its location, even when paralysis is present.

Berliner klinische Wochenschrift.

24 (XLII, No. 1, January 2.) *Zur Kenntnis des Lungen-Emphysems. J. Orth.
25 Urticaria (experimental study). J. Baum.
26 *Objective Heart Findings After Angina Pectoris.—Ueber objektiv nachweisbare Veränderungen am Herzen, namentlich auch über Pericarditis nach Anfällen von Angina pectoris. W. Kernig (St. Petersburg).
27 Zum therapeutischen Wert des Griserins. Schomburg.
28 Der Säuglings-Skorbut in Berlin (in infants). H. Neumann.
29 *Die Anwendung des Adrenalins in der chirurgischen Praxis. Hildebrandt.

24. **Origin of Emphysema.**—Orth has observed 2 cadavers in which the findings indicated that emphysematous degeneration had developed on a basis of congenital hypoplasia of the lung. One lung exhibited this condition with no traces of coal dust in one case, while the other lung was hypertrophied and contained coal dust and no traces of emphysema. He regards this absence of coal dust as conclusive that the lung had not participated in the breathing at any time. He thinks it probable that some injury of the lung tissue, reducing its resistance and elasticity, must precede the development of emphysema.

26. **Objective Heart Findings After Angina Pectoris.**—Kernig has long taught that angina pectoris is due to thrombotic and embolic processes in the coronary arteries, and that the coronary sclerosis is liable to induce foci of softening or infarct in the myocardium or to involve the pericardium in inflammation by allowing the passage of bacteria through the walls of the smaller vessels. The heart findings frequently confirm this assumption and impose the necessity for repose as the proper treatment of thrombosis and embolism. It is only in the severer forms of angina pectoris that such positive findings can be obtained, as a rule. He describes typical examples of such findings. In one group slight fever was noticed after the attack, with appreciable enlargement of the heart, both subsiding under complete repose. In one case the attack was followed by temperature of 37.5 C., with pulse of 84, 90 and 96, the heart found progressively broader after each attack. In another case there was dullness in the left second interspace, but this dullness was not apparent immediately after the attack, but developed in the course of the second day. The heart sounds were very loud in this interspace, close to the sternum, while they were very weak in the fifth interspace. No pericardial friction sounds were heard at any time. He accepts these findings as evidence that the left auricle had become enlarged. This enlargement has been experimentally established as an almost inevitable consequence of occlusion of the coronaries. Circumscribed dullness in the second left interspace, close to the edge of the sternum, is one of the most constant signs of mitral stenosis, according to his experience. The third group includes 5 cases in which acute pericarditis followed the day after the attack of angina pectoris. Huchard found 7 cases of recent pericarditis in his compilation of 185 cases of angina pectoris which came to dissection. The list included also 11 cases of chronic pericarditis and 14 of rupture of the heart. In 2 other cases in Kernig's experience the heart did not present any physical findings, but functional disturbances were manifest after the attack of angina pectoris, oliguria, edema, etc. They illustrate the transitional forms between the cases with positive findings and those in which the angina pectoris does not seem to be followed by any disturbances. In 9 cases published by Pawinski an attack of angina pectoris had preceded the pericarditis, and yet he ascribes the angina to neuritis of the cardiac plexus, although no other evidences of such neuritis were forthcoming. Kernig is convinced that he has saved many patients from sudden death by ordering absolute rest in bed for days or weeks after a severe attack of angina pectoris, when the objective findings suggested the possibility of impending trouble.

29. **Adrenalin in Surgery.**—Hildebrandt reviews the history of adrenalin and extols its advantages for the surgeon. Combined with cocain it insures anesthesia with very much smaller doses, while it prolongs the action of the anesthetic and reduces its toxicity. Subdural injection of cocain is fatal for the rat in a dose of .018 gm., while addition of adrenalin raises the lethal limit to .11 gm. Bier has announced that the addition of adrenalin robs spinal cocainization of all danger, but some fatalities have been reported from this technic. In one obstetric case Bier's directions were closely followed, but the

patient succumbed. König has frequently found adrenalin a great help in plastic operations on the urethra, to prevent the annoying bleeding from the bulb. Analgesia of the mucous membranes is readily attained in five minutes by dabbing the part with a 5 per cent. solution of cocain or beta eucain to which a few drops of 1 to 1,000 adrenalin have been added. To anesthetize the bladder 1 c.c. of suprarenin is added to a .1 or .2 per cent. solution of cocain, analgesia being complete in about fifteen minutes. The fluid must be withdrawn afterward. In operating on the skin or subjacent tissue, Schleich's infiltration method can be used, adding 10 drops of adrenalin to 50 c.c. of the fluid. A still better technic is to make a circle of injections of the fluid around the field of operation. This requires a little stronger concentration, about .05 to .1 per cent. solution of cocain or eucain, with from 5 to 10 drops of adrenalin to the 50 c.c. A circle of blisters is made around the field, at some little distance from it, and the canula is then inserted in the subcutis and the surrounding tissue infiltrated, thus enclosing the field in a complete ring. By this technic it is possible to resect the ribs without pain, infiltrating the subcutaneous cellular tissue and the musculature down to the pleura, in the interspace just above and below. A longer interval is required, however, when such extensive excision is contemplated. The larger, superficial nerves can be deadened in ten minutes by injecting across their course a few c.c. of a .2 per cent. cocain-adrenalin solution. There is danger of later necrosis of the tissues if strong concentrations of adrenalin are used. Gangrenous phlegmons have been known to occur after injection of a few drops of a 1 to 5,000 solution. Afterhemorrhage is also possible, as its effect subsides, if in such strength that the lumen of large vessels is closed. Both of these evils are avoided when the circulation in the capillaries alone is interrupted. For this a dilution under 1 to 10,000 is sufficient.

Centralblatt für Chirurgie, Leipsic.

Last indexed page 77.

30 (XXXI, No. 49, December 10.) *Behandlung des tuberkulösen Ascites. Schömann.
31 *Die ambulante Behandlung der Oberschenkel-Frakturen (of femur). S. Kofmann (Odessa).
32 (No. 50.) *Large, Pointed Foreign Bodies in Upper Esophagus.—Zur Behandlung grosser spitzer Fremdkörper im Halsteile der Speiseröhre. W. Kramer (Glogau).
33 (No. 51.) *Ein neues Ureteren-Kystoskop für den Katheterismus eines oder beider Ureteren. A. Freudenberg (Berlin).
34 (No. 52.) Automatic, Hinged Extension Pulley.—Eine automatisch drehbare Extensionsrolle. A. Hofmann (Freiburg).

30. **Treatment of Tuberculous Ascites.**—Schömann used to treat tuberculous ascites by laparotomy in appropriate cases and found the results of the operation always gratifying. But the necessary narcosis and the long rest in bed afterward render it a serious intervention for debilitated patients, and he has found that the same or even better results are attained by mere puncture and injection of a 1 to 5 per cent. glycerin emulsion of iodoform. The slow withdrawal of the ascitic fluid does not harm the weakest patient, and the symptoms rapidly subside after injection into the free abdominal cavity of from 1 to 2 cg. of the emulsion, repeated in from four to eight days, increasing the concentration and dose. He has treated by this technic 7 girls from 2 to 19 years old, all out-patients, and all could be regarded as cured in the course of from three to ten weeks. In 2 cases the serous exudation did not recur, but the oldest patient required five injections and the others three or four. She presented an apical infiltration with evening temperature and night sweats. The fever vanished after the third injection, the night sweats ceased and the lung lesion healed. She has been in good health since the end of treatment in September, 1902. There were no indications of iodoform intoxication in any instance and no complications or inconveniences of any kind.

31. **Ambulant Treatment of Fractures of Femur.**—Kofmann applies to fractures of the femur the cast used by Lorenz for coxitis. It extends below the knee and is applied in deep narcosis. The foot is held a little distance above the ground by side irons fastened in the cast with a crosspiece below the sole. He keeps a number of these irons constantly on hand, with an assortment of wooden sandals with soles and heels about two inches thick. One of these sandals is tied over the patient's shoe on the sound side. Thus equipped, the patient is able to walk about by the second day and is dismissed from the hospital by the third. In five or six weeks he returns to have the cast removed. In every instance the fracture has been found to be healed perfectly without the slightest deformity of the limb. In a few cases hemorrhage prevented the immediate application of the cast. He applied two sacks of sand on each side of the fractured limb. Their constant pressure soothed the pain and arrested further hemorrhage; the cast was then applied as usual. If the tissues appear too much compromised to be enclosed in the cast, he leaves an opening in the cast over this part for supervision of the healing processes.

32. **Large Pointed Foreign Bodies in Upper Esophagus.**—Kramer was able to accomplish the removal of a plate of false teeth which had lodged in the esophagus, without opening the latter. The corner of the plate had caught in the mucosa and all efforts to dislodge it had proved unsuccessful. He exposed the esophagus through an incision about 9 cm. long on the left side of the neck. The point of the plate could be readily palpated through the wall, and by manipulations through the wound with two fingers of the right hand and pressure with the left hand on the right side of the neck, he was able to dislodge the plate. The patient's retching then brought the plate up into the throat, whence it was readily extracted through the mouth. In the second case there was no effort at retching. When the plate was once dislodged by the manipulations it was extracted with a long, curving pair of forceps. The latest compilation of cases of foreign bodies in the esophagus (Balacescu) states that 69 out of the total 326 cases terminated fatally.

33. **A New Cystoscope.**—Freudenberg calls attention to two features which, he thinks, commend his cystoscope. The lamp and lens are on the convex side of the shaft, which has many advantages. The other new feature is that the optical part can be removed and with it the dividing wall between the optical part and the rest of the interior. Three illustrations show the details of the instrument.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 253.

35 (XXVIII, No. 50, December 17.) *Injuries of Uterus and Rupture.—Uterusverletzungen und Schwangerschaftsruptur. K. Baisch (Tübingen).
36 Zur Kasuistik der Mesenterial-Cysten. W. Haas.
37 Ulcus rotundum simplex vaginæ. H. Thomson (Odessa).
37½ Ueber einen operativ geheilten Fall von ausgetragener Extra-uterin-Gravidität (at term). L. v. Lingen.
38 (No. 51.) *Early Fetal Heart Sounds.—Zur Hörbarkeit der Herztöne im vierten und fünften Schwangerschaftsmonat. O. Sarwey.
39 *Zur Behandlung der klimakterischen Bluntungen (hemorrhages). A. H. Queisner.
40 *Der Gebrauch des galvanischen Stromes mit Kolpeuryse als Behandlungsmethode der chronischen Inversionen (des Uterus). J. v. Jaworski.
41 *Minor Points in Antisepsis.—Antiseptische Kleinigkeiten. O. Wille (Braunschweig).
42 (No. 52.) Ein neues Cystoscop-Stativ (standard). O. Polano.
43 Ueber Inversio uteri totalis. R. Wanner. Two cases.
44 Beitrag zur Histo- und Pathogenese des Chorionepithelioma malignum. T. Burdzinsky (St. Petersburg).
45 *New Principles and Instrument for Measurement of Pelvis.—Eine neue Theorie über Beckenmessung und die Beschreibung eines neuen Pelvimeters. S. v. Gaszynski (Warsaw).

35. **Injury of the Uterus and Rupture During Pregnancy.**—Baisch thinks that the weak spot resulting from some previous injury is responsible for the occurrence of rupture during pregnancy. He reports a case in which the wall of the uterus had been perforated with the finger during the extirpation of a placental polyp. The woman recovered without further intervention, but excessive hemorrhage from placenta previa at a delivery two years later compelled hysterectomy. At the spot of the former perforation there was a thin scar, free from muscle tissue. If rupture had occurred at this weak point the scar would probably have escaped attention.

38. **Early Diagnosis of Pregnancy.**—Sarwey's communication on the possibility of detecting the fetal heart sounds long before the time accepted as possible in the text-books, was summarized in THE JOURNAL, on page 1425 of the last volume.

He here describes 2 additional cases, which bring the number to 14, in which he was able to diagnose the pregnancy before the eighteenth week. The auscultation has to be perseveringly kept up, with all the precautions enumerated, the bladder completely emptied. In one case auscultation of the heart sounds at the sixth month revealed the existence of twins and established further that the trauma of birth is able to affect the heart to some degree.

39. **Treatment of Climacteric Hemorrhages.**—Queisner has cured 2 cases of climacteric hemorrhage, rebellious to all other measures, by slitting the lower segment of the uterus and suturing the two halves to the freshened roof of the anterior vagina. This allowed easy access to its entire interior and the mucosa was then cauterized with the actual cautery, with the complete arrest of the hemorrhages. This operation is less radical than hysterectomy, and answers the purpose fully as well in these cases. The patients were kept in bed only for four days.

40. **Galvanism as Supplement to Colpeurynter in Treatment of Chronic Inversion.**—Jaworski combines the electrode with the colpeurynter, the tip of the cathode terminating in a bag filled with water, the whole covered with a square of gauze. He gives illustrations of the instrument and relates its successful application in an old, inveterate case of inversion.

41. **Minor Points in Antisepsis.**—The fluid in which Wille keeps his instruments is water containing 1.5 per cent. borax, 3 per cent. carbolic acid and 2 per cent. formalin. The borax prevents rusting, the carbolic acid disinfects, and the formalin disguises the odor of the latter and probably enhances its antiseptic action. Rubber and metal instruments, syringes and brushes, keep perfectly in this fluid and are ready for use at any moment. The receptacle can be of enameled iron, tin or glass. He soaps and rinses the articles after using before replacing them in the fluid. Four years' experience with this fluid have fully established that this antisepsis is all that is necessary. For boiling instruments he uses .5 per cent. borax, wrapping the instruments in a cloth fastened with safety pins. He lifts the package out of the boiling water with bulldog forceps and hangs the package with the same forceps over a nail which projects far from the wall, where the contents dry out, or the package can be wrapped wet in parchment paper to be taken out of the house. After using, they are merely cleansed from blood and wrapped up, ready to be boiled again, thus saving much time. For convenience in wrapping he has his sounds made no longer than the curette, and the speculum is also a third shorter than usual. He keeps his basins in a wooden tub, like a butter tub, in a solution of sublimate. The basins are all of the same size so they fit together. The sublimate solution, with equal parts of salt, does not deteriorate in wood, as in an enameled vessel. For a lubricant, he has discarded oil, vaselin and soap, and uses a jelly made from Irish moss which has exactly the right consistency and is a superior lubricant, while the antiseptics retain their potency in it, as it is made with water. Its greatest advantage, however, is that it washes off immediately without leaving a trace. He keeps it in a wide-mouthed jar in which he can readily insert his hand; it usually has a little salicylic acid or stronger antiseptic incorporated with it.

45. **Pelvimeter on New Principle.**—The relations between the walls of the pelvis, their slant, the position of the symphysis in respect to the promontory and numerous other factors should enter into the measurement of the pelvis from the obstetric standpoint. The new pelvimeter described is an attempt to take advantage of all the various factors which have been established by anatomic-pathologic research. Not a single measurement, but the mutual relations between the various measurements form the criterion. The details of the pelvimeter constructed on these principles are shown in four illustrations. The longitudinal diameter of the symphysis is the base for the calculations. They are simple and when transferred to paper form a complete diagram of the entire interior of the pelvis, obtained without inconvenience to examiner or subject.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

46 (XXX, No. 49, December 1.) *Bacteriology and Puerperal Fever.—Die Erfolge der bacteriologischen Forschung in Erkennung, Verhütung und Behandlung des Kindbettfiebers. Döderlein (Tübingen).
47 *Ueber multiple Primär-Tumoren. P. Grawitz (Greifswald).
48 *Behandlung der Leukämie mit Röntgen-Strahlen. Joachim und Kurpjuweit (Königsberg).
49 *Wearing Out of the Nerves.—Die Aufbrauchkrankheiten des Nerven-Systems. L. Edinger (Frankfurt a. M.).
50 *Ueber den Typus A des Bacterium paratyphi; Typhus Serum Erfahrungen, und zur Mischinfektions-Frage. H. Kayser (Strasburg).
51 *To Enhance Resisting Powers.—Experimentelle Untersuchungen zur Frage der Erhöhung der natürlichen Resistenz des Peritoneums gegen operative Infektionen. L. Borchardt.
52 *Intraperitoneale Serum- und Kochsalzlösung-Injektionen zur Verhütung operativer Infektionen des Bauchfells (of peritoneum). A. Schmidt (Dresden).
53 Zur Pathogenese des Laktophenin-Icterus. S. Laache.
54 (No. 50.) *Ueber physiologische und pathologische Albuminurie. H. Senator.
55 Placenta-Lösung und Gummihandschühe (rubber gloves). F. Ahlfeld.
56 Verwendung der Gummihandschühe bei der manuellen Placentarlösung nebst Bemerkungen über die Ursache der Retentio placentæ (rubber gloves). Mende.
57 Zur Frage der gemischten Hedonal-Chloroform-Narkose. E. D. Podhoretzki.
58 Diagnose und Behandlung der Kieferhöhleneiterung (maxillary sinusitis). E. P. Friedrich (Kiel).
59 Tests of Hearing.—Prüfung der Gehörfunktion. Ostmann.
60 Extension Bed for Infants with Fractured Femur.—Streckbett für Säuglinge mit Oberschenkelbruch. H. Landau.
61 Durchdringung der Larven des Ankylostomum duodenale durch die Haut (penetration through skin). Lambinet.

46. **Prevention and Treatment of Puerperal Fever.**—Döderlein expatiates on the great value of the aid afforded by bacteriology in the prophylaxis of puerperal fever and in its treatment. About two-thirds of all cases are due to pyogenic germs, we have learned, but there is a large number caused by the putrefaction bacteria alone. He thus distinguishes between the septic and what he calls the sapric puerperal fevers from the Greek term *sapros*, rotten. Prophylaxis is required along different lines for these two varieties. They are very rarely associated. Septic infection is prevented by preventing the access of foreign pathogenic germs, the same as in surgical work. Sapric intoxication is prevented by removing the conditions which the putrefaction bacteria require for their development. These ubiquitous and unavoidable germs are unable to proliferate in an unfavorable environment. The more natural and complete the detachment and expulsion of the placenta the less foreign matter will remain in the uterus to attract bacteria. All measures which require long retention of foreign bodies in the uterus, such as gauze, tampons, laminaria, bougies, metreurynter, etc., afford particularly favorable conditions for the growth of these bacteria and are, therefore, liable to be more dangerous than more forcible measures which are of briefer duration. Puerperal affections will become less frequent the less artificial assistance is rendered and the more the natural defensive and protective processes are allowed to work undisturbed. The primary focus of both septic and sapric puerperal affections is generally in the uterus. Careful supervision of the temperature and prompt disinfection of the focus at the first warning rise will frequently abort the process in its inception, especially if of the sapric variety with fetid lochia. He prefers for the disinfectant a 3 per cent. alcoholic solution of lysoform, and thinks that antistreptococcus serum is indispensable in severe septic cases not too far advanced. Operative treatment of puerperal peritonitis has never proved successful. In selected cases of severe, localized infection of the uterus extirpation of the organ may save an otherwise doomed life. The Trendelenburg technic of resection of septic thrombosed vessels will only exceptionally find application.

47. **Multiple Primary Tumors.**—Grawitz has always contended that it is highly improbable that a single cause can be responsible for all malignant tumors. A parasitic etiology is incompatible with the clinical experiences of multiple primary tumors in the same subject. Even in case of generalized carcinosis or sarcomatosis, in which the blood would be swarming with parasites—if such existed—yet multiple primary tumors are rarely encountered and when found they usually bear the characteristics of metastases, due to deportation of cells and not to the settling of parasites. He recently discovered at the autopsy of a woman of 67 several benign myomas in the

uterus, a malignant sarcoma of the broad ligament with metastases, and a cancer in the small intestine, likewise with metastases. The latter were located in the ovaries, and he emphasizes the importance of search for a primary tumor in the stomach or small intestine in case of bilateral malignant disease of the ovaries. The woman had been in an insane asylum for nearly thirty years, but her physical health had been good until the last year. The microscopic findings speak convincingly, Grawitz thinks, against any parasitic etiology for the tumors observed.

48. **Roentgen Treatment of Leukemia.**—In the 2 cases reported the leukemic features of the blood and the leukemic enlargement of the spleen and of the glands all rapidly returned to normal under the influence of the *x*-rays. The general health showed marked improvement in the first case, one of myelemia. The other was a case of chronic lymphemia. A patient with splenic anemia treated with the same technic was not influenced. Hard tubes are best adapted for treatment of leukemia, and it might be well to protect the exposed area with a thin sheet of metal foil to filter out any soft rays that may be present.

49. **Wear and Tear of the Nerves Without Normal Repair.**—In this second article Edinger discusses the abnormal wearing out of the peripheral nervous system without normal repair. The wearing out may be due to relative or absolute excessive functioning or to the influence of some toxin or to a combination of both factors. The resulting neuritis in these cases is a painless affection, sometimes not giving rise to any symptoms or, at most, to a little paresthesia or motor weakness. There is no need to distinguish between the neuritis of old age, of diabetes, infectious diseases or of pregnancy. All belong, Edinger asserts, in this category of wear and tear of the nerves without normal repair, entailing a painless neuritis. Alcohol, lead and arsenic do not attack the nerves directly, but they weaken them so that wear and tear use them up more quickly. No case of acute paralysis after lead, alcohol or arsenic poisoning is on record. In the course of time a hard drinker is liable to present such a using up of so many nerves that the clinical picture of tabes, with or without muscular atrophy, is apt to result, or else a condition resembling progressive neurotic atrophy. This peripheral pseudotabes has many points in common with true tabes. It is due to the wearing out of nerves injured by alcohol, while in true tabes the abnormal wearing out of the nerves is due to their having been injured by the syphilitic virus.

50. **Mixed Typhoid and Paratyphoid Infection.**—Kayser writes from the "typhoid station" established at Strasburg to help in carrying out the Koch method of combating typhoid by eradicating each focus. He states that the paratyphoid bacterium, type A has been found in pure cultures in 3 cases and type B in 8 cases during the last year. In 15 cases the presumptive diagnosis of typhoid was based solely on the positive findings of 1 to 100 or higher in the agglutination test with the paratyphoid bacillus, type A. Suitable prophylactic measures were at once instituted, although the clinical findings were dubious and all other tests were negative. The course of the disease confirmed the diagnosis of typhoid in every instance except one case, in which the disease proved to be paratyphoid. The specificity of the highest agglutination value is not absolutely reliable unless corroborated by corresponding tests on animals. In typhoid or allied diseases the serum of the patient is liable to be capable of agglutinating not only the bacteria causing the disease, but also others resembling it, the values for the latter sometimes being higher even than those for the specific microbe.

51-52. **To Enhance Resisting Power of Peritoneum Before Operations.**—Borchardt has been long engaged in study of this problem and now announces that it is possible to materially enhance the resistance of the peritoneum by preliminary injection of physiologic salt solution. He commenced his researches independently of Mikulicz. (See THE JOURNAL, xliii, page 1733.) They have established that a preliminary injection of nucleinic acid, horse serum or physiologic salt solution is able to increase the resisting powers of the peritoneum and thus render conditions more favorable for the surgeon. He found that salt solution is fully as effectual as nucleinic acid, and consequently prefers it to the more toxic acid. This preliminary treatment proved most effectual with an interval of forty-eight hours before the operation. The increase noted in the resisting powers persisted for about four days. His results confirm those obtained by Petit, mentioned in these columns, page 1731, of the last volume.

Schmidt writes from the same clinic to report 5 cases in which the foregoing experimental findings were practically applied in the clinic. The preliminary injection of horse serum and salt solution evidently causes a slight irritation of the peritoneum which temporarily enhances its resisting powers. In one of the cases related the abdominal wound after the gastroenterostomy separated the seventh day and the bowels protruded, but there was no inflammation and the wound healed without any evidences of reaction. He thinks it is possible that injection of serum or salt solution might be used in the treatment of morbid processes in the peritoneum. It seems to be already established, he concludes, that the dangers may be lessened by it in incipient appendicitis, annexitis, ulcers, etc., re-enforcing the natural resisting powers as an aid to other medical or surgical measures. He gives an illustration of a little instrument which he has devised for injecting the fluid without danger of injury to the viscera. It is in two parts, one resembling an apple corer, a short cylinder trocar, 1 to 1.25 cm. long, with a sharp, slanting, cutting edge and crossbar handle. The other part is a long, round-tipped sound, with a lumen of 2 mm. and openings near the tip. When the short trocar has been introduced through the abdominal wall, the tube is passed through it, and a hole is bored with the blunt tube through the parietal peritoneum, and the fluid allowed to flow through it. Numerous tests on the living subject and on the cadaver have demonstrated that there is no danger from the use of these instruments under normal conditions, but in case of adhesions there is a possibility that in detaching them some of the intestinal content might escape into the peritoneum. He injected always from 5 to 10 c.c. of horse serum in .9 per cent. salt solution (250-500 c.c.) He used this amount of fluid, fearing that a smaller quantity would not spread evenly over the peritoneum. The preliminary injection was generally made from seventeen to nineteen hours before the operation. When the abdomen was opened, part or the whole of the peritoneum was found more or less congested, but there was little free fluid. The leucocytes had increased to about double the previous figure and by the next day to four times.

54. **Physiologic and Pathologic Albuminuria.**—Senator presents arguments to sustain his assumption that the appearance of physiologic and the closely allied pathologic albuminurias is due to a predisposition which may be congenital or acquired. This predisposition may be the result of an abnormal constitution of various organs, either the kidneys, the digestive tract, the blood vessels or the blood itself.

Münchener medicinische Wochenschrift.

62 (LI, No. 51, December 20.) *Ueber Herz Bigeminie nach Digitalis-Gebrauch. C. J. Fauconnet.
63 Die Augensymptome bei der Myasthenie (eye symptoms). A. Bielschowsky.
64 *Further Research on Causes of Eclampsia.—Weitere Untersuchungen zur modernen Lehre der Eklampsie. E. Wormser und A. Labbardt.
65 Ein Fall von Situs inversus des Magens, des Duodenums und der Milz bei einem 63-jährigen, weiblichen Individuum. J. Halff.
66 Zur Landryschen Paralyse. J. Jul.
67 Akute Kompression der Cauda equina durch ein Projektil. Operation. Heilung. F. Engelmann.
68 Ueber Sanatogen. J. Hoppe.
69 Packing Dressings and Tampons Ready to Use.—Abgepasste gebrauchsfertige sterilisierte Verbandmaterialien in sterilhaltender Verpackung. L. Grunwald.
70 Leukozyten-Zählung und Früh Operation bei Epityphlitis. F. Berndt. (Commenced in No. 50.)
72 *Legislation Against Irregular Practices in Baden.—Gesetzliche Massnahmen gegen die Kurpfuscherei in Baden. O. Neustätter.

62. **"Heart Bigeminus" After Administration of Digitalis.**—Fauconnet describes a case diagnosed as recurring endocarditis and mitral insufficiency, in which great irregularity was in-

duced in the heart action by administration of moderate doses of digitalis. The tracings show the prompt effect of the digitalis in inducing "heart bigeminus," with pseudo-bradycardia. The apex beat indicated 84 systoles, with a 42 radial pulse. Review of the European literature shows that 22 authors have reported double heart beat after the use of digitalis in valvular affections. A number of others have observed it in infectious diseases and during convalescence, one in a case of nephritis, another in catarrhal icterus, one in epilepsy, and one in diphtheria. Three writers have reported it in a valvular affection without digitalis, and 2 without mention of the existing disease. Doll has also reported a case of double beat due to an aneurism in the heart. In the case described in the article the connection between the digitalis and the consequent "heart bigeminus" was strikingly apparent. Fauconnet suggests, in explanation, that the drug exerted its usual effect by inducing more powerful contractions of the heart muscle, filling the cavities better, but the anatomic condition in the heart in severe valvular affections causes this increased action of the heart to be ultimately unfavorable for the organism. The extra systole indicates a maximal contraction of all the muscular elements, while all this expenditure of energy is almost entirely wasted so far as the circulation is concerned. The effects observed have nothing in common with ordinary digitalis intoxication, but they indicate the immediate suspension of the drug. Death may result from disregard of the warning pulsus bigeminus. Salaghi published last July an account of experimental study of the influence of the bigeminal action of the heart on the general circulation. He demonstrated that the double heart action, associated with mitral insufficiency or stenosis, would have the effect—by purely physical laws—of further increasing the stasis in the pulmonary circulation.

64. **Further Research on Causes of Eclampsia.**—This article relates a series of experiments based on the theory of the deportation of villi and syncytiolysis, as connected with the etiology of eclampsia. The results were practically negative.

72. **New Regulations in Baden Against Irregular Practices.**—See news columns.

Therapeutische Monatshefte, Liebreich's, Berlin.

Last indexed XLIII, page 1666.

73 (XVIII, No. 4.) Der akute Gelenk-Rheumatismus und die intravenöse Salizyl-Behandlung. F. Mendel (Essen-Ruhr).
74 Neuere Behandlungs-Methoden des Heufiebers (of hay fever). E. Fink (Hamburg).
75 Ueber Fetron-Salbe (ointment). E. Saalfeld.
76 Zur diuretischen Wirkung des Theocins speziell bei akuter Nephritis. Hundt.
77 *Untersuchungen über subdurale Injektion von Adrenalin und Cocain. Zeigan.
78 Scrofula and Brine Baths.—Skrofulose und Solbad. Kabić.
79 Etiology of Tabes.—Ist für die Enstehung der Tabes die Syphilis oder die Anlage und ein sozialer Faktor massgebend? O. Rosenbach (Berlin). (Commenced in No. 3.)
80 Action of Mud Baths.—Wirkungen der Moorbäder. A. Loebel.

77. **Analgesia from Subdural Injection of Adrenalin.**—Zeigan found that complete anesthesia below the point was induced in animals by subdural injection of 1 mg. adrenalin in 1 c.c. of physiologic salt solution. When the same amount was injected in 5 c.c. of fluid, it spread to the medulla and brain and caused severe symptoms on their part. The anesthesia of the parts below the spot is as complete as when cocain is used, but it does not last longer than eight to twelve minutes. The effects observed indicate mere anemia, not intoxication of the nerve cells. The animals were all lively afterward.

Hospitalstidende, Copenhagen.

Last indexed XLII, page 1345.

81 (Year XLVII, Nos. 17-18.) *Mechanical Dilatation.—Nyere Metoder til Behandling af Födslens Udvidningsperiode. Muus (Leopold Meyer's clinic, Copenhagen).
82 (No. 19.) Syphilis corymbosa. K. Gron and J. Haavaldsen (Christiania). Four cases.
83 (No. 20.) *Excochleatio uteri. H. Kaarsberg.
84 (No. 21.) Om Difteri-Statistik. H. I. Bing and V. Ellermann.
85 (No. 22.) Pericarcitisk Pseudo-Lever-Cirrhose og dens Behandling. K. Faber (Copenhagen).
86 Report of International Anti-Tuberculosis Conference. Copenhagen, May 26-29, 1904.
87 Treatment of Accidental Wounds in Private Practice.—Om Behandlingen af accidentelle Saar i privat Praxis. T. Schultz.
88 (No. 24.) Experiences with Hospital Infections.—Hospitalsinfektioner paa Blegdams-Hospitalet 1879-1903. Sörensen.
89 (No. 25.) *Fibromyoma uteri med Thrombophlebitis. R. Paulli.
90 (No. 26.) Autoinfection During Childbirth.—Om Selvinfektion under Fodslen. A. Johansen. (Commenced in No. 20.)
91 *Ett Tilfaelde af intermitterende Tyndtarms-Invagination. P. A. Fenger Just.

81. **Mechanical Dilatation.**—Muus states that Bossi's dilator had been applied at date of writing 35 times in Meyer's maternity, a larger experience than had been reported from any other clinic outside of Italy. There were 22 primiparæ, and in 7 the cervix was not obliterated, the os allowing the entrance only of a single finger. His experience has convinced him that the Bossi method is able to accomplish delivery rapidly and effectually without causing any appreciable lesions and without danger for the child. The latter can thus be removed from the influences (eclampsia, etc.) for which the rapid delivery is indicated. His impressions from the 15 cases of eclampsia were decidedly in favor of this method of dilatation. Eclampsia before 1890, when delivery was left to nature, gave a mortality of 20 per cent. The mortality during the last six years, in which delivery was hastened as soon as possible after commencement of the convulsions, has been less than 11 per cent. in 43 cases. In 20 in which delivery occurred unassisted 4 of the patients died. In 3 cases of placenta previa 2 patients were promptly and safely delivered by the Bossi method, but the third patient succumbed to pre-existing infection. Muus thinks that rigidity of the cervix is a very serious complication of delivery, and he now follows the rule that if the os remains closed, notwithstanding good labor pains, after the escape of the water, it is not wise to wait too long. Twelve hours should be the maximum expectancy, and the Bossi dilator will then be found more useful than any of the old-style instruments. Four patients with pyelonephritis and 3 with heart disease were smoothly and safely delivered by this means. One woman was admitted moribund and a living child was safely delivered. One of the cardiac patients presented cyanosis and edema, pulse 84, the findings suggesting a congenital valvular affection. As the symptoms were not pressing, nothing was done until labor commenced. Then the cervix was dilated with the Bossi dilator under ether from 2 to 11 cm. in fifteen minutes, and a living child extracted with forceps. The patient has been in good health since, better than for some years previously. Muus regards this case as one of those that best demonstrate the advantages of mechanical dilatation. Without it such demands would have been made on the woman's system in delivering her child that she could scarcely have survived, while with it the delivery was smoothly accomplished in less than half an hour.

83. **Examination of Uterine Scrapings.**—Kaarsberg emphasizes the importance of microscopic examination of the scrapings whenever the uterus is curetted for any cause. He quotes Landau to the effect that 99 out of every 100 women with postclimacteric hemorrhage have a cancer. Whenever curetting is done, the physician should be prepared for any eventual operation as in case of taxis of an incarcerated hernia.

89. **Fibromyoma Uteri, with Thrombophlebitis.**—Paulli describes a case of fibromyoma of the uterus with thrombophlebitis alternately in legs and arms. The patient was a woman of 46. She recovered under symptomatic treatment and has been in comparative health during the year since. He believes that a developing myoma is not only a local affection, but that the organism suffers generally, possibly with a tendency to a triad of symptoms, like the triad in exophthalmic goiter, in Addison's and in Bright's disease. The triad with myoma is the tumor in the uterus, a series of nervous symptoms—neurasthenic, neuralgic or mental—and a general vascular disturbance entailing a tendency to thrombophlebitis. It is impossible to say positively which element of this triad is the primary. An anatomic heart lesion was found in 40.8 per cent. of 71 cases of myoma at the Berlin Charité as reported in 1894. Kaarsberg found pigmented degeneration of the myocardium in 4 out of 8 myoma cadavers, 2 of the deaths being due to embolism in the pulmonary artery. Kessler of Dorpat found myofibroma of the heart in a patient who had succumbed the seventh day after extirpation of a myoma in the fundus weighing 56 pounds. He thinks that this coincidence of myofibroma and myoma probably occurs frequently. In 3 out of 5 cases

of death from embolism of the pulmonary artery observed at the hospital in Paulli's charge the patients succumbed the second week after ablation of a myomatous uterus, the fatality coming like lightning from a clear sky. Two other myoma operations were followed by death, one from secondary hemorrhage with consecutive peritonitis and one from local peritonitis with ileus. The total mortality has been 5 in 83 myoma operations during the last five years. Embolism of the pulmonary artery was not observed, except in these 3 myoma cases, in the experience of 362 laparotomies. Rosthorn had one death from embolism in 66 abdominal radical operations for myoma; Michel, 2 in 586; Burckhardt, 7 in 236; Hofmeier, 3 from embolism and 1 from "heart stroke" in 223 laparotomies for myoma, and Czempin, 2 in 82, but Engstrom had no deaths from this cause in a mortality of 5 in 100 operations. In Paulli's 3 cases of fatal embolism, slight evening temperature had been noted. Other circumstances observed indicate, he thinks, that prophylactic elevation of the foot of the bed may not prove effectual, although its importance can not be overestimated for most cases; that the heart should be stimulated before the operation with digitalis, camphor or strychnin, and that ether, and not chloroform, should be used with saline infusion of a liter a day during the first few days, with nutrient enemata. It is extremely important that the intestinal peristalsis should be promoted to prevent tympany. The rectum should be rinsed out several times a day for this purpose.

91. **Recurrent Intussusception.**—In the case related a girl of 17 had been treated for symptoms of gastric ulcer, but without improvement. A laparotomy was then undertaken on the presumptive diagnosis of gallstones, but nothing was found to indicate lithiasis. After ten days of calm the symptoms recurred, suggesting ileus this time, until the discovery of a tumor corrected the diagnosis to invagination of the small intestine. The intussusception was reduced by a laparotomy and the intestine sutured to prevent recurrence. Again the invagination recurred, this time at a higher point, reduced by a third laparotomy with resection of a loop 7 cm. long. The patient has been in good health since.

Medicinskoe Obozryenie, Moscow.

Last indexed page 335.

92 (LXI, No. 1.) *K kazuistikye ostrago staphylo-mycoza. N. Bereznegovsky.
93 Case of Thrombosis of Sinus Transversus and Internal Jugular Vein, Secondary to Otitis Media; Recovery.—K kazuistikye tromboza poperetchnoi pazukhi i vnutrennei yaremnoi veny. A. M. Arkhinoff.
94 *K voprosu o hemophilii. V. A. Geyer.
95 *Hot Baths in Treatment of Epidemic Cerebrospinal Meningitis.—Goryatchiya vanni pri letchenii epid. cerebrospin. meningita. V. M. Rozhansky.
96 Technic for Differentiation of Tubercle and Smegma Bacilli.—K voprosu ob otlitchitelnom raspoznavanli tub. bac. ot bac. smegmy. O. M. Nevyadomsky.
97 (No. 2.) *Favorable Action of Atropin in Two Cases of Hemoptysis.—2 slutchai udatchnago primyeneniya atrophina pri upornom krovokharkanye. W. O. Woltke.
98 O dyestvii formalina na parshu (formalin in favus). Scharzhinsky and Bogroff.
99 *Study of Red Corpuscles.—Ob izmyerenii obshago obema krasnikh tveletz v krovi tchelovyeka pri normalykh i patologitcheskikh usloviyakh. E. V. Gote.
100 (No. 3.) Gonorrheal Urethritis in Boys.—O pereloinom uretritye maltchikov. A. P. Rudsky.
101 K voprosu ob etiologii vostotchnoi yazvy (parasitology of oriental sore). E. I. Martzinovsky and S. L. Bogroff.

92. **Acute Staphylomycosis.**—A girl of 10 succumbed in a few days to what was apparently an acute infectious osteomyelitis. Pure cultures of the staphylococcus aureus were derived from the exudates, tissues, etc., the case being best described as an acute metastatic staphylomycosis. The clinical and autopsy findings are given in detail, with a review of the literature on the subject, especially the Russian. The general conclusions seem to be that the mortality of staphylomycosis is high and that the further necrosis of the bones is not always arrested by surgical intervention.

94. **Hemophilia.**—Bobroff had occasion to operate on a young man whose knee was swollen and painful. A similar condition had been noted a few years before after a trauma, but had spontaneously subsided. The urine was occasionally blood-stained, without known cause, and the patient's brothers suffered also from swellings in the knees and hip joints. The hemorrhage was continuous, as the knee was incised, and the blood showed no signs of coagulating. Applications of 20 per cent. ferropyrin and liq. ferri sesquichlorid internally, with ergotin, failed to arrest the bleeding, as also compression on the femoral artery for twenty-four hours. The autopsy revealed no cause for the hemorrhage. Bobroff thinks that hemophilia is due to the composition of the blood itself, probably to an abnormal proportion of cytoglobin, a product of the destruction of the red corpuscles. Another cause may be the thinness of the walls of the arteries from defective development of the musculature in the blood vessels. The elastic fibers in the skin also show a defective development in these cases and thus fail to exert the normal pressure on the capillaries, while the lumen of the arteries is unable to contract. The majority of hemophilics are slight, with light hair, white and transparent skin, blue eyes and transparent teeth, although a few cases have been published of hemophilia in the brunette and even in the negro.

95. **Hot Baths in Treatment of Epidemic Cerebrospinal Meningitis.**—Fifty-one patients out of 62 were treated with the hot baths. They were given once or twice a day for from fifteen to twenty minutes each, the water at a temperature of 32 R. (104 F.). Ice was applied to the head during the bath. The benefits were purely symptomatic, but they helped to tide the patient past the dangerous phases. The general mortality in the 62 cases was 45 per cent., but among those treated with the hot baths it was only 33 per cent. and it was zero in the 4 cases in which treatment was instituted during the first three days. One died out of 6 treated the fourth day and 6 out of 8 in which treatment was commenced the fifth day. The total mortality was thus 10 per cent. in the first four days and 39 per cent. in the 41 in which treatment could not be instituted till later. Out of 50 patients treated in another pavilion in the same hospital during the same period, but without the hot baths, 40 succumbed, a mortality of 80 per cent.

97. **Atropin in Hemoptysis.**—In the 2 cases reported nothing was able to arrest the severe hemoptysis until atropin was injected subcutaneously, when the blood rapidly disappeared from the sputa. The doses were from .0002 to .0006 gm. of atropin, repeated on six consecutive days. One patient had been ineffectually treated with innumerable measures, including ergotin, hydrastis, morphin, liq. ferri sesquichlorid and terebinthin, before atropin was tried, the rebellious hemorrhages from the lungs threatening speedy dissolution.

99. **Red Corpuscles.**—Gote asserts that very characteristic and instructive findings can be obtained by study of the proportions between the number of red corpuscles and their mass, that is, the general content of the blood in red corpuscles. He uses the hematocrit, and tabulates the findings in a large number of cases of various diseases, as also in healthy subjects. To cite a few typical cases from his tables we note in a case of croupous pneumonia that the reds numbered 4,980,000; the hemoglobin, 90; the proportional content of reds was 41; the absolute content, 8.5. In a case of chlorosis the reds numbered 2,500,000; the hemoglobin, 37; the proportional content of reds was 17, and the absolute content, 6.8. In one of myxedema the reds numbered 3,730,000; the hemoglobin, 80; the proportional content, 44, and the absolute content, 11.8, while in one case of pernicious anemia the absolute content was 16.4, with 1,212,000 reds.

Revista de Cirugia, Havana.

Last indexed page 168.

102 (VIII, No. 13.) *Apendice, appendicitis y apendicectomia. F. Dominguez Roldan.
103 (No. 14.) Special Dangers Incurred by a Country from Its Proximity to Another Great Republic.—Peligros especiales que corre un pais por su inmediata vecindad a alguna otra republica. F. Torralbas.

102. **Appendicectomy.**—A number of plates show the technic adopted by Roldan for seeking and removing the appendix. He remarks that it takes longer to describe the technic than to execute it, as he has frequently commenced the search for and completed the extraction of the appendix in fifty-five seconds. The incision is made according to Jalagier and is only long enough to introduce two fingers comfortably.